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Public Document No. 48

The Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

METROPOLITAN DISTRICT COMMISSION

FOR THE YEAR 1926

PUBLICATION OF THIS DOCUMENT APPROVED BY THE COMMISSION ON ADMINISTRATION AND FINANCE

1M. 1-27. Order 8572.

Mass. Secretary of the Commonwealth
Aug. 3, 1927

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REPORT OF THE METROPOLITAN DISTRICT COMMISSION

To the Honorable the Senate and House of Representatives of the Commonwealth of Massachusetts in General Court assembled

The Metropolitan District Commissioner has already presented to your Honorable Body an abstract of the account of the receipts, expenditures, disbursements and liabilities of the Metropolitan District Commission for the fiscal year ending on November 30, 1926, and now, in accordance with the provisions of section 100 of chapter 92 of the General Laws, presents a detailed statement of its doings for the calendar year ending on December 31, 1926.

SEVENTH ANNUAL REPORT

I. ORGANIZATION AND ADMINISTRATION

Commission, Officers and Employees

The term of office of Frank A. Bayrd expired on November 30, 1926, and he was reappointed for the term of five years next succeeding. The membership of the Commission has consequently remained as in the preceding year: Davis B. Keniston, Commissioner; Frank A. Bayrd, Frank G. Hall, William H. Squire and George B. Wason, Associate Commissioners. Frank G. Hall is Director of Parks, John R. Rablin, Director of Park Engineering, William E. Foss, Director of the Water Division and Frederick D. Smith, Director of the Sewerage Division.

George Lyman Rogers has continued as secretary and the following as chief engineers: of parks, John R. Rablin; of water, William E. Foss; of sewerage, Frederick D. Smith.

The maximum number of employees during the year was 1,631, divided as follows: general offices, 24; parks, 991; water, 399; sewerage, 217.

In this tabulation of employees the police are included under parks, although they give considerable protection to portions of the water system.

II. GENERAL FINANCIAL STATEMENT

Year ending November 30, 1926

Expenditure for construction	$3,420,790.20
Expenditures, miscellaneous	313,792.51
Expenditure for maintenance	3,260,259.83
Total expenditure	6,994,842.54
Unexpended balance, maintenance appropriations	1,050,300.53
Serial bonds issued	337,500.00
Serial bonds paid	362,187.50
Loan notes issued	200,000.00
Loan notes paid	1,000,000.00
Increase in sinking funds	2,255,003.33
Decrease in net debt	3,079,690.83

On November 30, 1926

Net debt	$40,037,090.99

III. CONSTRUCTION

The second and third sections of the Mill Brook Valley Sewer in Arlington and Medford were completed during the year and work upon the fourth and last section was started in August. The first three sections have been connected with the Arlington sewer and are now diverting a substantial amount of sewage, appreciably decreasing the pumping at the Alewife Brook sewerage pumping station.

Work was started July 12, 1926, upon the Malden, Revere and Everett drainage channel authorized by Chapter 456 of the Acts of 1924. A temporary injunction issued by the Supreme Court on July 27, 1926, has enjoined further work pending final decision of the Court upon the proceedings brought.

The pump and engine at the East Boston sewerage pumping station have been repaired and a concrete locker building constructed at the Chelsea side of the siphon leading under Chelsea Creek. The tide gate overflow and sand catcher at Belle Isle Inlet has been repaired. The vertical tubes in the vertical boiler No. 1 at the Ward Street pumping station have been replaced. The Deer Island wharf has been rebuilt.

The last section of the Weston Aqueduct Supply Main was completed in June. Two 30-inch steel water pipes have been laid across each of the River Street and Western Avenue bridges between Boston and Cambridge. The Northern High-service pipe line in Malden, Melrose and Stoneham was completed in September. Surveys and plans for the proposed pipe line from Chestnut Hill pumping station to the Arborway at Pond Street in Jamaica Plain, have been nearly completed. The new line for improving service in Belmont and Watertown has been laid but some of the resurfacing work is not completed.

The River Street bridge across the Charles River was surfaced during the Spring and the bridge finally completed. The John W. Weeks foot bridge has been built and substantially completed. The plans and specifications for the Cottage Farm Bridge have been prepared and the contract for construction let.

The filling and sub-grading for the Old Colony Parkway have been practically completed; the bridge for the New York, New Haven & Hartford Railroad over the roadway at Pope's Hill Station is under construction, and plans and specifications for the bridge over Dorchester Bay are being prepared.

The Northern Traffic Artery from Lechmere Square, Cambridge, to Mystic Avenue, Somerville, has been substantially completed and is ready for travel.

The Quincy Shore Roadway has been widened to 40 feet and one mile of concrete shore protection constructed. Quannapowitt Parkway has been filled and rough graded from North Avenue to Lowell Street, Wakefield. The Middlesex Fells Parkway to Main Street, Everett, including three bridges, has been widened to provide for four lines of traffic in place of two.

The West Roxbury Parkway from Weld Street, West Roxbury, to Newton Street, Brookline, has been completed and opened to traffic. The extension of Soldier's Field Road, North Harvard Street to Western Avenue has been substantially completed. Quinobequin Road, Newton, has been widened and resurfaced.

In the Middlesex Fells, Forest Street to Elm Street, Elm Street from the Parkway to Highland Street and South Border Road from Forest Street for about one-half mile have been reconstructed and Forest and Main Streets widened. Electric lighting has been installed from Mystic Avenue to Elm Street, replacing the Welsbach naphtha lamps.

At Nantasket Beach the bath house yards have been repaired and 800 new lockers added. New gravel roofs have been placed on the café and pavilion and the sea wall extended 300 feet.

Surveys and plans for the extension of the Lynn Fells Parkway from the present end at Bellevue Avenue, Melrose, to the Lynn Woods, and for the Stoneham-Wakefield Route from Main Street, Middlesex Fells Reservation to Quannapowitt Parkway, Wakefield, are being prepared.

IV. RAINFALL AND CONSUMPTION OF WATER

The precipitation and yield of the watersheds during the year was considerably below normal. The Wachusett Reservoir reached the maximum height for the year of 383.25 on May 24, 11.75 feet below high-water line, and 2.94 feet below the maximum height of the preceding year. This was the least quantity of water stored at time of maximum storage for any year since the reservoir first filled in 1908, and was 3.5 billion gallons less than for the maximum storage in 1925. The storage was drawn down to a minimum height on December 31, of 363.18, or to 30.6 billion gallons, or 5.86 feet lower than the minimum height for 1925, or a loss of 5.48 million gallons from the minimum storage of 1925.

Chapter 375 of the Acts of 1926 created the Metropolitan District Water Supply Commission and authorized the extension of the water supply to the Ware River. This supply or some other additional supply will be required within the next two or three years to offset the excess of consumption over the yield of the

watersheds and to prevent an unsafe reduction of storage in the Wachusett Reservoir.

During the year 47,517,455,000 gallons of water were furnished to the 18 cities and towns supplied, equivalent to a daily average consumption of 130,184,800 gallons, and for the estimated population of 1,326,080 at the rate of 98.2 gallons per capita, a little less than the rate in 1925.

V. SPECIAL INVESTIGATIONS

In accordance with the provisions of Chapter 19 of the Resolves of 1926 the Commission investigated and reported as to the advisability, expediency and cost of widening Nahant Road from its junction with Washington Street in the City of Lynn to that part of Nahant known as "Little Nahant". The report is printed as House Document 125 of 1927.

In accordance with the provisions of Chapter 29 of the Resolves of 1926 the Commission investigated and reported on the feasibility of constructing one or more public golf courses on land of the metropolitan park system. The report is printed as House Document 150 of 1927.

VI. OTHER REPORTS

The reports of the Directors of Parks, Park Engineering, Water and Sewerage, with tables, statistics and financial statements, are hereby presented.

Respectfully submitted,

DAVIS B. KENISTON,
Metropolitan District Commissioner.

February 28, 1927.

REPORT OF THE DIRECTOR OF PARKS

Hon. Davis B. Keniston, *Commissioner, Metropolitan District Commission,*
1 Ashburton Place, Boston, Massachusetts.

Dear Sir:— During my service of six years as Director of Parks,I have prepared annual reports regarding the progress of work in the parkways and reservations of the Boston Metropolitan District. The following report reviews briefly some of the changes which have occurred during the past, and changes which may be required during the next decade. To compress all the available information into five or six pages is obviously impossible, and I have consequently confined myself to comments on outstanding features.

A glance at the map of Boston and its environs indicates the extent of the System of Metropolitan Parks. It is distributed through an area of about four hundred square miles and through nearly forty cities and towns. About fourteen square miles is the area of the System. The boulevards and carriage roads amount to seventy miles or more. A water frontage of thirteen miles on the salt water and more than fifty miles on river banks is included. These shores and banks are safeguarded against undesirable or unsanitary private development by placing them in public control for recreation use.

These extensive areas of parkway, river bank reservations, and areas of woodland, serve an important function in breaking up the monotony of the Metropolitan area which, without adequate reservations of open ground, would form a nearly unbroken texture of streets and houses extending mile after mile. The value of these open spaces in accommodating long distance pleasure vehicle travel has become during the past decade a notable feature, but one which cannot be given full rein without injury to the recreation use for which these open spaces were dedicated. One of the most difficult problems presented to the Commission has been the adaptation of roadways intended for the use of horse-drawn vehicles to enable them to function under the stress of intensive motor vehicle use without destruction of marginal plantations of trees, shrubbery and grass, and without bringing noise and danger into the parks themselves.

The extent of the Park System and its active service to the community is reflected in the budget of expense. For the past year, the total upkeep cost for the

entire System of Metropolitan Parks, including the parkways, bathing beaches, and all other lands under the control of the Park System, amounted to $2,095,999.65. Mere mention of the following items of upkeep cost will show the extraordinary range and detail of the maintenance — the clearing of the ice in the Charles River Basin, the operation of drawbridges, the removal from the parkways and reservations of litter and waste after holidays, the system of policing, the spraying of trees, tree planting, patrol of waterfront for life-saving, the provision of bathing suits and towels at the beaches, not to mention the upkeep of road surfaces, road lights, and surface water drainage systems.

To keep these maintenance costs down to a reasonable figure without curtailing the usefulness of the parkways and parks to the public, constitutes a problem in itself. The details of this problem are many. The fuller use of bridge-tenders' services in the winter, when the streams are practically closed to navigation, should be studied. This would apply to draws like those at Craigie's Bridge, in the neighborhood of Lynn and elsewhere.

The remarkable changes which have taken place for public recreation during the past twenty years explain the growing popularity of the bathing beaches, the intensive use of the park roadways, and the demand for space for playing golf. Many large cities of the country are providing large space for golf courses. The pressure to set aside areas for such use, which can be adapted to this use without injury to landscapes or to public service, is becoming so great that courses are being considered near the Neponset River Reservation on the borders of the Fowl Meadows. This ground is rapidly growing up to brush and small trees which hide pleasant views of the meadows and the Blue Hills. On this marginal land a useful golf course could be laid out without injury to the Reservation. Estimates of cost are given in the report of this Commission for December 10th, which report also reviews other sites in the Blue Hills and at Riverside, together with a discussion of reasonable charges for the use of such courses.

Among important new projects are the bridges either just finished or in the course of construction. Among new bridges are those at River Street and at Western Avenue in Cambridge. The Cottage Farm Bridge is under construction, with accommodations for a high-level roadway passing over the Union Freight Railroad, which is to be relocated to accommodate both bridge structures upon a single system of supports arranged in a manner to offer the least obstruction to the use of the river for boating purposes. Beneath this bridge an underpass is to be constructed for the accommodation of vehicular traffic along the western bank of the Charles, thus connecting Bay State Road with Cambridge without conflict with heavy traffic of the Cottage Farm Bridge itself.

Legislative authorization for the construction of the so-called "Northern Artery", which will connect the whole system of northern reservations and parkways with the central and southern park systems via the Charles River Basin, has brought this much-needed thoroughfare nearly to completion. The bridge over the Boston & Maine Railroad is in place. Work in the neighborhood of Lechmere Square is under way, and within a few months the union of the northern and southern parts of the Metropolitan pleasure roads through this link should become fully realized.

The West Roxbury Parkway has been extended to Newton Street; Old Colony Parkway is in process of construction from Columbus Park southward across Dorchester Bay to Neponset toward the Quincy shore; the Weeks Bridge opposite the Harvard Business School is nearly completed; Soldiers Field Road, North Harvard Street to Western Avenue is nearly finished; Quinobequin Road has been widened and resurfaced; taking plans have been made for the extension of Bellevue Avenue, Melrose, to the Lynn woods; in the Middlesex Fells Parkway and Reservation much construction work is under way; at the Nantasket Beach Reservation bath-houses have been provided with additional lockers and a new sea wall has been built; the roadway at the Quincy shore has been widened and a concrete shore protection a mile in length has been completed; at Quannapowitt Parkway filling and rough grading has been carried out from North Avenue to Lowell Street in Wakefield; three bridges have been widened to provide four lines of traffic in place of two in the Revere Beach Parkway from Main Street to the Middlesex Fells Parkway. The need of an extension of the Riverside driveway from the Arsenal, skirting the Cambridge cemetery, having for its destination the Lowell Memorial

Park and the Alewife Brook roadways is becoming apparent (a bridge across the river between the Cambridge Cemetery and the Larz Anderson Bridge may become necessary and is being studied by the Planning Division); resurfacing of roadways is being undertaken in Revere; the overcrowding of Craddock Bridge is raising the question of the provision of another bridge across the Mystic in that vicinity.

Extensive use of the temporary bridge across the Basin opposite St. Mary's Street during the year or more which elapsed before the Cottage Farm Bridge was closed for construction work, indicates that more ample crossings of the Charles River Basin may be required in the near future. If accommodations on a large scale can be arranged for pleasure vehicles to cross the Basin in the neighborhood of the Charlesgate, in the manner recently suggested by Arthur A. Shurtleff for the Boston Park Department, the construction of a bridge at Dartmouth Street or of a permanent structure between the Cottage Farm Bridge and the Charlesgate may be postponed for a term of years, but a bridge or tunnel at Dartmouth Street will be needed eventually. The feasibility of using earth embankments either on the edges of the Basin or in its center, to reduce the length and consequently the cost of bridge structures, has been widely discussed and indicates the economy of such projects.

More ample accommodations for the crossing of the Basin go hand in hand with the need for more ample accommodations for vehicles upon the edges of the Basin. The time has arrived when an extension of Bay State Road between the Cottage Farm Bridge and the Harvard Bridge certainly as far east as Hereford Street should be taken in hand as a measure of public safety and convenience.

At very moderate cost, that portion of this connection could be built from Hereford Street to the Charlesgate passing under the Harvard Bridge. This desirable link would eliminate vexatious traffic delays which now occur on Beacon Street when the vehicular lanes leading to the Harvard Bridge are moving. As time goes on, a further extension of a marginal road from Hereford Street to the embankment near Beaver Street may be required in order to accommodate pleasure vehicles. When this extension is brought about, a more adequate connection between Arlington Street and the Basin to eliminate the present dangerous and circuitous route through Beaver Street doubtless will be required. At the opposite end of the Basin a better connection should be provided between the future marginal roads of the Charles River in the vicinity of River Street to make connections with Commonwealth Avenue over the tracks of the Boston & Albany Railroad, where studies for such connection have already been made by the Planning Division. The Esplanade should be extended from Charlesgate West to Cottage Farm Bridge.

In the course of improvements along the edge of the Basin, I advocate the planting of many long-lived trees and the use of naturalistic sloping shores, the last to prevent the objectionable wave action attendant upon the use of vertical sea walls and to save expense.

Studies have been made for additional parking spaces to eliminate highway congestion at the Old Colony Parkway, Nahant, and elsewhere. With these highway improvements goes the requirement for a more adequate lighting system. This year $58,845.00 has been spent on new lights and many more are needed before our System will be properly lighted.

Adequate protection for the men, women and children wishing to use the parks and parkways without molestation from offenders and for the protection of the facilities and structures of the System, necessitates a continuance of the system of policing. During the past year 3,800 persons have been arrested. Of these, over 3,400 were found guilty. The greatest number of arrests were of persons violating the motor vehicle regulations of the District Commission (1317). Second in order came arrests for violation of the public statutes relating to motor vehicles (1099). Third in order came arrests for drunkenness (757). The police have reported a total of 2,436 accidents. The total fines assessed by the courts amounted to slightly over $28,000. The total value of property found and turned over to owners was nearly $100,000.

The total expenses of the Police Department for the year were $426,700.00, of which about $375,000.00 was for payrolls. During the year, while in the performance of police duty, eleven officers were injured, involving a total absence of 260 days on account of such injuries.

The present strength of the Police Department is 170. One officer was promoted to sergeant, three officers were retired, two officers and one sergeant resigned, and eleven new patrolmen were added as regular members. The general duties require the attention of twenty-nine superior officers and 140 regular patrolmen. The police work, which is greatly increased by the added land area, the greater number of bridges, and the additional parkways, is a heavy load, and ten additional men are greatly needed. The force should be brought up to 150 regular patrolmen. During the summer, 40 summer officers are required. To assist these men in their work additional traffic signals are needed. Captain Hawkins, who is in charge of the Police Department, has handled his work well and deserves great credit. The department is poorly paid, and when an opportunity for an increase of payment presents itself an improvement in this direction should be made. The police are required to carry through a regular routine of drills and are ready and equipped for any call of duty wherever they may be ordered in the State. They have been called many times and were never found wanting. New, more up-to-date uniforms have been provided when required. In all, the Department controls eight motor boats, twenty-one automobiles (six of these are used partly for maintenance work), thirty-nine motorcycles, three patrol wagons and ambulances. Under the Captains of the six different divisions, the work of clearing the roads of snow is well performed. They use one Mack truck, twelve Liberty trucks borrowed from the National Guard, four five-ton Pierce Arrow trucks, and two Nash quads borrowed from the Department of Public Works, and three tractors. These vehicles are also used on other work during the year. The cost of tug-boat service for breaking ice in the Charles River Basin has amounted to about $10,463.00, which is paid to the State through the Public Safety Department.

The Park Department Engineering force at the command of the Commission includes a director, senior assistant, two designing engineers and draftsmen, ten senior engineering assistants, fifteen assistant civil engineers, two inspectors, twenty-two assistants, a foreman, a chauffeur, and a supervisor of machinery; they are to be congratulated on the efficient work done by them under Mr. John R. Rablin.

The rent paid for the headquarters building of the Commission amounts to $5,000.00 a year. This is an old dwelling remodeled from time to time to accommodate the drafting rooms, files and offices. The building is far from fireproof, but contains records of priceless value. It is to be hoped that quarters better arranged for the protection of valuable material and with fuller equipment for convenience and efficiency may be found.

The successful operation of some of the more important park facilities, notably at Nantasket, depends upon the letting to responsible persons of permits for concessions. Much care has been taken to place these important functions with concessionaires who are capable of giving adequate service. At the Nantasket Hotel a lease has been arranged which yields $22,500.00 a year. From lunch-rooms and other privileges leased by the Department, the receipts amount to about $16,829.00. Persons holding permits to operate motor boats for carrying passengers on the Charles River Basin were required to pay $100.00 during the past summer.

The Commission continues its policy of keeping large buses and trucks off the parkways, and this should be continued, as the roads are too narrow and crowded for such vehicles.

One hundred thirty band concerts have been held, employing in all twenty-two different bands. The attendance at these concerts, given in fourteen different locations, is variously estimated at from two hundred to fifteen thousand. The costs of such band concerts have amounted to approximately $19,991.00.

New, modern, fireproof quarters with adequate sanitaries are needed at Revere, also at Mystic Lake and in Dedham. Thousands of bathers lack adequate toilet and other accommodations. The sanitary facilities at Revere are very old and most expensive to maintain.

The cost of spraying trees to combat insect pests during the past year has amounted to about $64,301.00. During the previous year the costs were $59,189.00.

The Boston Metropolitan District has taken, earlier than other large communities of this country, a forward step in regional planning. Two years ago the Legislature

Metropolitan Park System — December 1, 1926

Reservations (Acres).

	Bunker Hill.	Blue Hills.	Middlesex Fells.	Stony Brook.	Beaver Brook.	Hart's Hill.	Hemlock Gorge.	Charles River.	Mystic River.	Neponset River.	King's Beach and Lynn Shore.	Revere Beach.	Winthrop Shore.	Quincy Shore.	Nantasket Beach.	Total Acres.
Cities																
1 Boston	6.05	–	–	463.72	–	–	–	169.16	–	146.89	–	–	–	–	–	785.82
2 Cambridge	–	–	–	–	–	–	–	138.86	–	–	–	–	–	–	–	138.86
3 Chelsea	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4 Everett	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5 Lynn	–	–	–	–	–	–	–	–	–	–	19.59	–	–	–	–	19.59
6 Malden	–	–	59.53	–	–	–	–	–	–	–	–	–	–	–	–	59.53
7 Medford	–	–	949.69	–	–	–	–	–	42.32	–	–	–	–	–	–	992.01
8 Melrose	–	–	177.54	–	–	–	–	–	–	–	–	–	–	–	–	177.54
9 Newton	–	–	–	–	–	–	4.24	183.55	–	–	–	–	–	–	–	187.79
10 Quincy	–	2,562.57	–	–	–	–	–	–	–	–	–	–	–	32.91	–	2,595.48
11 Revere	–	–	–	–	–	–	–	–	–	–	–	64.29	–	–	–	64.29
12 Somerville	–	–	–	–	–	–	–	–	4.03	–	–	–	–	–	–	4.03
13 Waltham	–	–	–	–	42.77	–	–	38.68	–	–	–	–	–	–	–	81.45
14 Woburn	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Towns.																
15 Arlington	–	–	–	–	–	–	–	–	7.83	–	–	–	–	–	–	7.83
16 Belmont	–	–	–	–	15.56	–	–	–	–	–	–	–	–	–	–	15.56
17 Braintree	–	67.84	–	–	–	–	–	–	–	–	–	–	–	–	–	67.84
18 Brookline	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
19 Canton	–	471.34	–	–	–	–	–	–	–	264.26	–	–	–	–	–	735.60
20 Cohasset	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
21 Dedham	–	–	–	–	–	–	–	–	–	234.54	–	–	–	–	–	234.54
22 Dover	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
23 Hingham	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
24 Hull	–	–	–	–	–	–	–	–	–	–	–	–	–	–	25.59	25.59
25 Milton	–	1,547.68	–	–	–	–	–	–	–	270.33	–	–	–	–	–	1,818.01
26 Nahant	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
27 Needham	–	–	–	–	–	–	14.24	–	–	–	–	–	–	–	–	14.24
[Randolph]	–	257.00	–	–	–	–	–	–	–	–	–	–	–	–	–	257.00
28 Saugus	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
29 Stoneham	–	–	702.60	–	–	–	–	–	–	–	–	–	–	–	–	702.60
30 Swampscott	–	–	–	–	–	–	–	–	–	–	3.10	–	–	–	–	3.10
31 Wakefield	–	–	–	–	–	22.97	–	–	–	–	–	–	–	–	–	22.97
32 Watertown	–	–	–	–	–	–	–	78.70	–	–	–	–	–	–	–	78.79
33 Wellesley	–	–	–	–	–	–	4.58	66.07	–	–	–	–	–	–	–	70.65
34 Weston	–	–	–	–	–	–	–	124.79	–	–	–	–	–	–	–	124.79
35 Westwood	–	–	–	–	–	–	–	–	–	6.57	–	–	–	–	–	6.57
36 Weymouth	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
37 Winchester	–	–	261.93	–	–	–	–	–	–	–	–	–	–	–	–	201.93
38 Winthrop	–	–	–	–	–	–	–	–	–	–	–	–	16.83	–	–	16.83
	6.05	4,906.43	2,151.29	463.72	58.33	22.97	23.06	799.90	54.18	922.59	22.69	64.29	16.83	32.91	25.59	9,570.83

Parkways (Acres).

	Blue Hills.	Woburn.	Middlesex Fells.	Revere Beach.	Mystic Valley.	West Roxbury.	Neponset River.	Fresh Pond.	Lynn Fells.	Furnace Brook.	Nahant Beach.	Hammond Pond.	Old Colony.	Quinnapowitt.	Lynnway.	Winthrop.	Dedham.	Alewife Brook.	Total Acres.
1	.27	–	–	–	–	75.65	22.76	–	–	–	–	–	50.75	–	–	–	21.98	–	171.41
2	–	–	–	–	–	–	–	12.40	–	–	–	–	–	–	–	–	–	86.38	98.78
3	–	–	–	21.10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	21.10
4	–	–	–	31.16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	31.16
5	–	–	–	–	–	–	–	–	–	–	.32	–	–	–	–	–	–	–	.32
6	–	–	23.58	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	23.58
7	–	–	44.56	8.10	265.34	–	–	–	–	–	–	–	–	–	–	–	–	–	318.00
8	–	–	–	–	–	–	–	–	7.57	–	–	–	–	–	–	–	–	–	7.57
9	–	–	–	–	–	–	–	–	–	–	–	114.50	–	–	–	–	–	–	114.50
10	–	–	–	–	–	–	–	–	–	101.14	–	–	2.72	–	–	–	–	–	103.86
11	–	–	–	66.31	–	–	–	–	–	–	–	–	–	–	5.15	8.61	–	–	80.07
12	–	13.98	–	–	4.95	–	–	–	–	–	–	–	–	–	–	–	–	9.97	28.90
13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
14	–	22.64	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	22.64
15	–	–	–	–	17.40	–	–	–	–	–	–	–	–	–	–	–	–	28.10	45.50
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20.43	20.43
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
18	–	–	–	–	–	9.09	–	–	–	–	–	69.19	–	–	–	–	–	–	79.18
19	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	15.16	–	15.16
22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
25	83.31	–	–	–	–	–	51.16	–	–	–	–	–	–	–	–	–	–	–	134.47
26	–	–	–	–	–	–	–	–	–	–	81.66	–	–	–	–	–	–	–	81.66
27	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
28	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
29	–	–	–	–	–	–	–	–	.15	–	–	–	–	–	–	–	–	–	.15
30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
31	–	–	–	–	–	–	–	–	–	–	–	–	–	15.54	–	–	–	–	15.54
32	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
34	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
37	–	.60	–	–	50.20	–	–	–	–	–	–	–	–	–	–	–	–	–	50.80
38	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.13	–	–	.13
	83.58	23.21	82.12	126.73	337.89	85.64	73.92	12.40	7.72	101.14	81.98	183.69	53.47	15.54	5.15	8.74	37.14	144.88	1,464.97

	Grand Total Reservations and Parkways (Acres).
1	957.23
2	237.61
3	21.16
4	31.16
5	10.01
6	83.11
7	1,310.01
8	185.11
9	302.29
10	2,699.34
11	144.36
12	32.93
13	81.45
14	22.64
15	53.33
16	35.99
17	67.84
18	79.18
19	735.60
20	–
21	249.70
22	–
23	–
24	25.59
25	1,952.48
26	81.66
27	14.24
	257.00
28	–
29	702.75
30	3.10
31	38.51
32	78.79
33	70.65
34	124.79
35	6.57
36	–
37	312.73
38	16.96
	11,035.80

Parkways (Miles).

	Blue Hills.	Woburn.	Middlesex Fells.	Revere Beach.	Mystic Valley.	West Roxbury.	Neponset River.	Fresh Pond.	Lynn Fells.	Furnace Brook.	Nahant Beach.	Hammond Pond.	Old Colony.	Quinnapowitt.	Lynnway.	Winthrop.	Dedham.	Alewife Brook.	Total Miles.	
1	.015	–	–	–	–	1.810	.72	–	–	–	–	2.70	–	–	–	.49	–	5.735	1
2	–	–	–	–	–	–	–	.520	–	–	–	–	–	–	–	–	1.563	2.083	2
3	–	–	–	.814	–	–	–	–	–	–	–	–	–	–	–	–	–	.814	3
4	–	–	–	1.662	–	–	–	–	–	–	–	–	–	–	–	–	–	1.662	4
5	–	–	–	–	–	–	–	–	–	–	–	–	–	.120	–	–	–	.120	5
6	–	–	1.515	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.515	6
7	–	–	2.850	.482	4.45	–	–	–	–	–	–	–	–	–	–	–	–	7.782	7
8	–	–	–	–	–	–	–	–	1.060	–	–	–	–	–	–	–	–	1.060	8
9	–	–	–	–	–	–	–	–	–	–	1.20	–	–	–	–	–	–	1.200	9
10	–	–	–	–	–	–	–	–	–	4.320	–	–	.36	–	–	–	–	4.680	10
11	–	–	–	2.295	–	–	–	–	–	–	–	–	–	.570	.88	–	–	3.745	11
12	–	–	.740	–	.38	–	–	–	–	–	–	–	–	–	–	–	.303	1.423	12
13	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13
14	–	1.31	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1.310	14
15	–	–	–	–	1.40	–	–	–	–	–	–	–	–	–	–	–	–	.848	2.248	15
16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.473	.473	16
17	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	17
18	–	–	–	–	–	.80	–	–	–	–	–	–	–	.80	–	–	–	–	1.60	18
19	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	19
20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20
21	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.49	–	.490	21
22	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	22
23	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	23
24	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	24
25	2.250	–	–	–	–	–	1.510	–	–	–	–	–	–	–	–	–	–	–	3.790	25
26	–	–	–	–	–	–	–	–	–	2.230	–	–	–	–	–	–	–	–	2.230	26
27	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	27
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
28	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	28
29	–	–	–	–	–	–	–	–	.060	–	–	–	–	–	–	–	–	–	.060	29
30	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	30
31	–	–	–	–	–	–	–	–	–	–	–	–	.774	–	–	–	–	–	.774	31
32	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	32
33	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	33
34	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	34
35	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	35
36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	36
37	–	.07	–	–	1.780	–	–	–	–	–	–	–	–	–	–	–	–	1.850	37
38	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	.02	–	.020	38
	2.265	1.38	5.105	5.253	8.01	2.61	2.260	.520	1.120	4.320	2.230	2.00	3.06	.774	.690	.90	.98	3.187	46.664	

appointed a Metropolitan Planning Division made up of a representative of the following State Commissions: Department of Public Works, Public Utilities Board, Metropolitan District Commission, and the Transit Department of the City of Boston. Three others, including the Chairman, are appointed by the Governor. The men who have been appointed to these several positions are: Henry I. Harriman, Chairman; A. C. Ratshesky, Ralph S. Bauer, Everett E. Stone, Richard K. Hale, James B. Noyes, and Frank G. Hall.

The activities of this Planning Division during the past three years have been notable. This work includes plans for the approaches, underpasses, and general design of the Cottage Farm Bridge. The project to unite the northern and southern portions of the District with a wide thoroughfare connecting the northern parkways at Somerville with the parkways of the Charles River Basin has already been mentioned. The Board has recently reported a co-ordinated scheme for railroad transportation lines of the District and various projects for the extension of the main thoroughfares, chiefly roadways of a circumferential type intended to enable traffic to find its way around centers of congestion, as for example the so-called Southern Artery and the projects now under construction for a main circumferential route swinging around the southerly, westerly and northerly sides of the District from Braintree to Lynn.

Respectfully submitted,
FRANK G. HALL, *Director of Parks.*

December 31, 1926.

REPORT OF THE DIRECTOR AND CHIEF ENGINEER OF PARK ENGINEERING

Hon. Davis B. Keniston, *Commissioner, Metropolitan District Commission.*

Dear Sir:— I submit the following report of the work done under the direction and supervision of the Engineering Department of the Parks Division, during the year ending December 31, 1926.

The engineering force has been somewhat increased, due to the large amount of work in progress and the average organization during the year has consisted of one Chief Engineer, one senior assistant engineer, fourteen assistant engineers, two engineering inspectors, three designing engineers, thirty-nine engineering assistants, four clerks and stenographers, one garage foreman, one chauffeur, one supervisor of machinery, one electrical engineer superintendent. Forty-four drawbridge attendants also are under the authority of the Chief Engineer.

Plans and specifications were prepared and fifteen contracts let for works aggregating about three and one-half millions of dollars ($3,500,000) in cost. Included in this work were the construction of five bridges, one in Old Colony Parkway, two in Northern Traffic Artery and two over the Charles River Basin; the construction of 5.08 miles of new boulevard and the reconstruction of about 6 miles of existing boulevard.

The work on three of the contracts made in 1925, the River Street Bridge, Mt. Vernon Street Bridge, and filling in Dorchester Bay for Old Colony Parkway, has been completed this year.

The work under the contracts let this year, has been wholly or substantially completed except in three cases, two of which it was not expected to finish. The work on several of the contracts, although substantially completed so that it could be opened to public use, ran so late into the fall that it was not possible to do the final cleaning and trimming up. This work will be done in the early spring.

Construction plans are in progress for the completion of Old Colony Parkway, including the bridge over Dorchester Bay; also, for the completion of the Northern Traffic Artery, including bridge over Lechmere Canal and the remodelling of the garage and storage building of the Commission on Commercial Avenue, Cambridge.

Surveys and plans are in progress for the acquirement of land for the extension of Lynn Fells Parkway from the present ending at Bellevue Avenue, Melrose, to Lynn Woods as a link in the Circumferential Highway; for the acquirement of land for the Stoneham-Wakefield Route from Main Street at Middlesex Fells Reservation, Stoneham, to Quannapowitt Parkway at Wakefield.

In connection with the work of maintenance, operation and repairs to bridges, dams, lock and gates, extensive repairs have been made to several of the bridges including the widening of three bridges on the Revere Beach Parkway between Middlesex Fells Parkway and Main Street, Everett; also, repairs and repaving of Wellington Bridge.

The installation of an electric street lighting system to replace existing Welsbach naphtha lamps, has been extended during this year by the completion of the section of Middlesex Fells Parkway from Mystic Avenue, Somerville, to Elm Street, Medford, a distance of 3.7 miles. 179-600 candle power incandescent lamps, suspended from bracket arms attached to the trolley poles were installed. These lamps are served from armored cable laid in the ground without conduits.

The cost of conducting the department has been as follows:

Engineering:		
Construction:		
Services	$76,234.96	
Expenses	5,670.48	
		$81,905.44
Maintenance:		
Services	$32,531.19	
Expenses	2,750.78	
		$35,281.97
Total		$117,187.41

The following is a detailed list of the work done under the direction of the Engineering Department.

Parkways

Cambridge Parkway. — Changes have been made at the northerly end of Memorial Drive to widen the entrance to the approach to the West Boston Bridge. The cost of the work was about $3,500.00.

Lynn Fells Parkway. — The work of making surveys and preparing taking plans for the extension of the parkway from Bellevue Avenue, Melrose, to Lynn Woods, a distance of 3.03 miles, is in progress. The first section from Bellevue Avenue to the Saugus Line is nearly completed and it is expected to make a taking of this section at once, as much of the land has been cut up into house lots and building operations are in progress.

Middlesex Fells Parkway. — Wellington Bridge has been repaired and repaved under contract No. 96 with Simpson Bros. Corporation. The work was begun May 25, 1926, and completed July 21, 1926, at a total cost of $21,419.74. The work consisted of removing the existing old wood block pavement on both sections of the bridge and the repaving of the northerly section of the bridge from the drawbridge to the Medford shore with granite block, and the repaving of the southerly section from the drawbridge to the Somerville shore with wood block, using as much of the old block, which was removed, as was suitable. The floor of the drawbridge was wholly reconstructed with new lumber.

Under contract No. 101 with James H. Fannon, the work of resurfacing the westerly drive of the parkway from Forest Street to Elm Street was begun August 2, 1926, and completed November 2, 1926. The work consisted of reconstruction of this section of roadway with bituminous macadam, at a total cost of $7,963.12.

A new system of electric street lighting has been installed in this parkway from Mystic Avenue, Somerville, to Elm Street, Medford, a distance of 3.7 miles. The materials were purchased by the Purchasing Bureau of the Department of Administration and Finance upon requisition and specifications of this Department, and the cable, consisting of 49,678 feet of armored parkway cable, was laid by the forces of Middlesex Fells Division. The type of fixtures is the same as that on Revere Beach Parkway, 600 candle power incandescent units suspended from bracket arms on iron poles. In this case, however, the bracket arms were attached to the trolley poles of the Boston Elevated Railway, already located in the parkway, thereby saving the cost of new poles and eliminating the duplication of poles in the parkway. There are 179 new lamps replacing 190 Welsbach naphtha lamps. This system was turned on for operation December 23, 1926. The lamps in Somerville from Mystic

Avenue to the channel of Mystic River are operated by the Edison Electric Illuminating Company of Boston, and those from Mystic River to Elm Street, by the Malden Electric Company.

Northern Traffic Artery. — Under contract No. 92 with Coleman Bros., Incorporated, the work of constructing bridge for the Northern Traffic Artery over the Southern Division of the Boston & Maine Railroad, was begun June 1, 1926, and is substantially completed. The work consists of building concrete abutments and retaining walls along the approaches, and the building and erection of steel truss bridge 100 feet in width and of 171½ feet span. This bridge is built to span 8 tracks, 6 of the Boston & Maine Railroad, and 2 possible rapid transit tracks. The cost of the work under this contract has been $192,913.80.

Under contract No. 97 with Coleman Bros., Incorporated, the work of grading, surfacing and other work for the construction of the Northern Traffic Artery from Lechmere Square to the bridge over the Boston & Maine Railroad, Cambridge and Somerville, was begun June 21, 1926, and is substantially completed. The roadway is generally 80 feet in width, and is paved with granite blocks on concrete base and cement grouted joints. Sidewalks are paved with granolithic or brick. Two car tracks of the Boston Elevated Railway are located in the center of the roadway. In connection with this work it was necessary to rebuild sewers, water pipes and conduits. The total length of the work under this contract was 1.3 miles, and the total cost, $343,883.51.

Under contract No. 102 with Coleman Bros., Incorporated, work of building section from the Boston & Maine Railroad Bridge to Mystic Avenue, Somerville, was begun July 29, 1926, and is substantially completed. Considerable of this section is laid out with two roadways, each 40 feet in width, and 10 feet planting strip between. The roadways are paved with granite block on concrete base as in the previous section and the sidewalks are paved with granolithic generally. The pavement on the approach to the bridge over the Boston & Maine Railroad has been laid in a temporary manner on account of possible settlements of the deep fill, with the intention of removing in the spring and repaving on the concrete base after settlements have taken place. There are no car tracks in this section and water and gas pipes and conduits have been laid throughout.

A new electric lighting system has been installed by the Edison Electric Illuminating Company of Boston throughout both sections of the Artery and consists of underground conduits and cables with ornamental poles and magnetite arc lamps.

Although not shown on the original plans, by an agreement with the City of Somerville, a bridge has been constructed to carry the Artery over Gilman Street, Somerville. Gilman Street crosses the Artery on the approach to the Boston & Maine Railroad Bridge. It was thought by the Commission that the street was not so important a thoroughfare as to require construction of the bridge, but the City of Somerville desired that it be kept open and agreed to pay part of the cost of construction of the bridge. This work was done by Coleman Bros., Incorporated, in connection with their work of building bridge over Boston & Maine Railroad. The total cost of the Gilman Street Bridge was $37,492.29.

Nahant Beach Parkway. — Extensive repairs were made in the spring to the Nahant Bath house and yards. The wood work in the yards had become rotted and it was necessary to replace a large proportion of it. The cost of this work was $19,900.78.

Chapter 19 of the Resolves of 1926 required a report from this Commission on the feasibility of widening Nahant Road and providing parking space for automobiles. Investigations were made and report made to the legislature recommending the use of the space between the roadway and the street car tracks on the southerly side of the roadway for parking purposes.

Old Colony Parkway. — The work of furnishing and placing filling material in Dorchester Bay under contract No. 84 with the Bay State Dredging & Contracting Company, which was begun June 13, 1925, was completed about October 1, 1926. The total of about 1,500,000 cubic yards of material was required, at a total cost of $1,002,424.29.

Work under contract No. 85 with Coleman Bros., Incorporated, for construction of bridge over Mt. Vernon Street near the junction of the parkway with Strandway,

which was begun September 7, 1925, was completed June 26, 1926, at a total cost of $120,615.15.

Under contract No. 90 with Coleman Bros., Incorporated, work of grading, surfacing, building bridge for the New York, New Haven & Hartford Railroad over the Old Colony Parkway near Popes Hill Station, was begun October 15, 1926, and is still in progress.

Construction plans are in progress for bridge over Dorchester Bay and for surfacing and finishing the section from Freeport Street to Strandway. The bridge over the bay is to be of concrete and stone masonry 70 feet in width and of 5 spans, 4 of reinforced concrete and the center span to be steel bascule drawbridge.

Quannapowitt Parkway. — Under contract No. 89 with the Greenough Construction Co., work of grading and other work from North Avenue to Lowell Street, Wakefield, was begun February 24, 1926, and was completed June 18, 1926, at a total cost of $29,127.44.

Revere Beach Parkway. — The section of Revere Beach Parkway from Middlesex Fells Parkway to Main Street, Everett, has been widened to provide for the increased amount of traffic. The roadway was originally constructed of a temporary width of 28 feet and has been widened to 36 feet, which will provide for 4 lines of traffic. The work of surfacing was done by the forces of Revere Beach Division.

Incidental to the widening, three bridges, two over the Boston & Maine Railroad, and one over the Malden River, were widened. The work was done by the Boston Bridge Works and Maurice M. Devine.

The work of installing electric lighting system in Revere Beach Parkway, which was not wholly completed in 1925, was finished early this year and the whole system has been in operation during the year.

West Roxbury Parkway. — The acquirement of land for extension of West Roxbury Parkway from Weld Street, West Roxbury, to Newton Street, Brookline, has been completed.

Under contract No. 94 with Thomas Joseph McCue Construction Company, the work of constructing this section was begun May 13, 1926, and completed November 24, 1926, at a total cost of $135,757.46.

Reservations

Charles River Reservation, Upper Division. — Quinobequin Road between Boylston Street, Newton Lower Falls, and Boylston Street, Newton Upper Falls, has been widened and resurfaced by the forces of Charles River Upper Division. The total length of the road is about 1.8 miles, and it was formerly only about 12 feet wide. The roadway surface has been widened to 18 feet and some of the sharp curves eliminated.

Charles River Reservation, Lower Basin. — Under contract No. 93 with T. Stuart & Son Company for the construction of the John W. Weeks Bridge across the Charles River Basin, opposite DeWolfe Street, Cambridge, work was begun July 1, 1926, and is substantially completed. The work remaining to be done is the carving of the seals and lettering, the furnishing and erection of bronze work for lamp posts, lamps and tablets, and the grading of the approaches. This work will be done in the early spring. This bridge is for pedestrian traffic only and funds for its construction were presented to Harvard College by the Associates of Honorable John W. Weeks. By act of the legislature the Trustees of Harvard College presented the structure to the Commonwealth, the work of construction to be done by this Commission. The architectural features of the design were prepared by McKim, Mead & White of New York. The bridge is primarily to connect Harvard College in Cambridge with the new group of the Harvard Graduate School of Business Administration on the Boston side of the river.

Under contract No. 103 for construction of an extension of Soldiers Field Road from North Harvard Street to Western Avenue with Thomas Joseph McCue Construction Company, work was begun September 13, 1926, and completed to such an extent that it was open to public traffic during the winter. Some work of finishing planting spaces, slopes and sidewalks is yet to be done.

Under contract No. 62 with T. Stuart & Son Company, the work of building Cottage Farm Bridge was begun about November 1, 1926, and is now in progress.

This work consists of the construction of a highway bridge on the site of the old wooden trestle bridge, the relocation of the Grand Junction Branch of the Boston & Albany Railroad, and construction of a new bridge across the river for same, the extension of Bay State Road underneath the highway bridge and under the relocated railroad to provide a future extension along the easterly river bank to Cambridge Street.

Under contract No. 100 with J. F. White Contracting Company, work of grading on the Boston approach for the relocation of the railroad was begun July 26, 1926, and suspended on account of delay in removal of the St. Alphonsus Boat House. Work was again resumed in December and has been completed, at a total cost of $7,087.06.

Under contract No. 99 the Bay State Dredging & Contracting Company rebuilt about 1,000 feet of the river wall between Broad and Lechmere Canals on the Cambridge side, and about 200 feet at the Bay State Road Extension. Work was begun July 19, 1926, and is still in progress.

Middlesex Fells Reservation. — Under contract No. 101 with James H. Fannon, work of resurfacing Elm Street from Middlesex Fells Parkway to Highland Avenue and South Border Road, a distance of about one quarter mile from South Street, was begun August 2, 1926, and completed November 2, 1926. The work consisted of reconstructing these sections of roadway with bituminous macadam, at a total cost of $26,849.64.

Incidental to the work on South Border Road, a new connection was made between South Border Road and the northerly roadway of Middlesex Fells Parkway at the junction of Forest Street. This work included the construction of a masonry culvert for the brook.

Extensive repairs were required to the observation tower on the land conveyed to the Commonwealth last year by the Lawrence Estate. It was necessary to repair the steel work and rebuild the wooden floors at each landing. This work was done by A. P. Rounds at a cost of $4,402.78.

New carpenter and paint shop has been built at Middlesex Fells Headquarters. Plans were prepared by this Department and work done by Henry E. West, Builder, at a total cost of $5,802.95.

Nantasket Beach Reservation. — Extensive repairs and changes have been made in the bath house yards, with the addition of 800 steel lockers. The gravel roofs on the café and pavilion of the hotel have been relaid and repairs have been made to the boiler house chimney, which required repointing and repairs to the top. The rubbish incinerator has been relined with fire brick.

The sea wall along the front of the café has been extended 300 feet. This latter work and the work of bath house repairs was done by the forces of the Division. The other work was done by contract.

Quincy Shore Reservation. — Under contract No. 91 with Paul Caputo, the work of constructing shore protection and widening and reconstruction of the roadway along the reservation from Hancock Street, Atlantic, to Fenno Street, was begun May 17, 1926, and completed November 15, 1926, at a total cost of $249,972.24. The shore protection consists of concrete wall with series of steps and curb above. The total length of shore protection constructed is about 1 mile. The total length of roadway widened and reconstructed, was about 2 1-3 miles.

Stoneham-Wakefield Route. — Surveys and plans for acquirement of land for parkway from Main Street at Middlesex Fells Reservation to Quannapowitt Parkway in Wakefield, are in progress.

Bridges and Locks

All work of maintenance and repair of bridges and locks and operation of draw-bridges has been done under the direction and supervision of this department.

It was proposed to paint and repair the lock gates at Charles River Dam in November of this year, but at the request of the shipping interests, the work was postponed to February, 1927.

The work of ice breaking in the Charles River Basin for the season of 1925 and 1926 was done by the police boat owned by the Commonwealth, at a total cost of $10,463.69. Work was begun December 18, 1925, and completed March 25, 1926.

The following is a record of the traffic through locks and drawbridges during the year:

Charles River Dam and Locks

Number of openings, 4,767	Piling (lineal feet), 25,295
Number of vessels, 7,505	Marble (tons), 109
Number of boats, 2,131	Sand (tons), 427,207
Lumber (feet B. M.), 1,663,482	Gravel (tons), 199,795
Coal (tons), 268,361	Rubble stone (tons), 36,890
Oil (barrels), 651,120	Granite (tons), 4,502
Empty barrels, 34,893	Miscellaneous (tons), 125

There were 3,694 drawbridge openings.

Cradock Bridge Lock

Number of openings, 324	Number of boats over rollway, 170
Number of boats, 384	

Malden River Bridge

Number of openings, 383	Number of vessels, 685

Neponset Bridge

Number of openings, 295	Number of vessels, 425

Saugus River Bridge

Number of openings, 797	Number of vessels, 1,145

Wellington Bridge

Number of openings, 146	Number of vessels, 210

General

The road repairs and maintenance have been done by the forces of the various divisions under the supervision and direction of the Engineering Department.

All bridges under the care and control of the Commission have been inspected twice during the year and estimates of cost of repairs included in the budget.

Respectfully submitted,

JOHN R. RABLIN, *Chief Engineer and Director of Park Engineering.*

Boston, February 16, 1927.

Table I. — Data relating to Metropolitan Park System

Areas of Reservations and Parkways

	Acres	
Reservations:		
Blue Hills	4,906.43	
Bunker Hill	6.05	
Middlesex Fells	2,151.29	
Stony Brook	463.72	
Beaver Brook	58.33	
Hart's Hill	22.97	
Hemlock Gorge	23.06	
Charles River	799.89	
Mystic River	54.18	
Neponset River	922.59	
King's Beach and Lynn Shore	22.69	
Revere Beach	64.29	
Winthrop Shore	16.83	
Quincy Shore	32.91	
Nantasket Beach	25.59	
Total		9,570.83
Parkways:		
Hammond Pond	183.69	
Blue Hills	83.58	
Old Colony	53.47	
Woburn	23.24	
Middlesex Fells	82.12	
Revere Beach	126.73	
Mystic Valley	337.89	
Neponset River	73.92	
Fresh Pond	12.40	
Lynn Fells	7.72	
Furnace Brook	101.14	
Nahant Beach	81.98	
Lynnway	5.15	
Winthrop	8.74	
Dedham	37.14	
Alewife Brook	144.88	
West Roxbury	85.64	
Quannapowitt	15.54	
Total		1,464.97
Grand total, reservations and parkways		11,035.80

Lengths of Formal Roads Constructed

	Double Roadways Miles	Single Roadways Miles	
Reservations:			
Charles River	—	5.77	
Lynn Shore	—	1.12	
Quincy Shore	—	2.24	
Revere Beach	—	2.70	
Winthrop Shore	—	1.07	
			12.90
Parkways:			
Alewife Brook	—	.70	
Blue Hills	1.46	1.61	
Cambridge	.37	3.19	
Dedham	—	.89	
Fresh Pond	—	.50	
Furnace Brook	—	4.32	

Parkways:	Double Roadways Miles	Single Roadways Miles	
Lynn Fells	—	1.05	
Lynnway	—	.68	
Middlesex Fells	4.10	1.77	
Mystic Valley	—	6.17	
Nahant Beach	—	.50	
Neponset River	—	.76	
Old Colony	—	1.51	
Revere Beach	1.45	3.73	
West Roxbury	—	2.85	
Winthrop	—	1.09	
Woburn	—	1.38	
	7.38*	32.70	32.70
*Equivalent in miles of single roadway			14.76

Highways transferred by or taken from cities and towns:	Miles	
Alewife Brook Parkway	.44	
Blue Hills Reservation	1.23	
Charles River Reservation	.39	
Middlesex Fells Reservation	6.63	
Nantasket Beach Reservation	.71	
		9.40
Length of automobile roads in reservations:		
Blue Hills	5.35	
Charles River	2.80	
Middlesex Fells	4.06	
Stony Brook	3.25	
		15.46
Grand total		85.22

All above roads open to automobile traffic.

Length of Carriage Roads and Bridle Paths in Reservations	Miles
Blue Hills Reservation	27.08
Middlesex Fells Reservation	14.55
Stony Brook Reservation	1.60
Beaver Brook Reservation	.22
Charles River Reservation	.89
Total	44.34

Lights in Parkways and Reservations	Lights
Alewife Brook Parkway (arc lights)	10
Blue Hills Parkway (Welsbach gas)	80
Charles River Reservation, Upper Division, Soldier's Field Road, Arsenal Road and North Beacon Street, Arsenal Street Bridge (electric)	20
Charles River Reservation, Boston Embankment (electric)	106
Cambridge Parkway (electric)	202
Charles River Reservation, Lower Basin, Dam and Lock (arc)	16
Harvard Bridge (electric)	30
Western Avenue Bridge (electric)	14
Temporary Cottage Farm Bridge (electric)	10
Fresh Pond Parkway (electric)	15
Furnace Brook Parkway (Welsbach gas)	79
Lynn Fells Parkway (Welsbach naphtha)	17
Lynn Shore Reservation (electric)	30
Lynnway (electric)	10
Middlesex Fells Parkway (electric)	171
Middlesex Fells Reservation (Welsbach naphtha)	29
Middlesex Fells Reservation (electric)	55

	Lights
Mystic Valley Parkway (Welsbach naphtha)	60
Nahant Beach Parkway (electric)	7[1]
Nantasket Beach Reservation (electric)	29[2]
Old Colony Parkway (electric)	46
Quincy Shore Reservation (Welsbach gas)	78
Revere Beach Parkway (electric)	181
Revere Beach Reservation (electric)	119[3]
Winthrop Parkway (Welsbach naphtha)	6
Winthrop Parkway (electric)	19
Winthrop Shore Reservation (electric)	7
Total	1,446

Miles of Seashore	Miles
Lynn Shore	1.50
Nahant Beach	3.92
Revere Beach	2.74
Winthrop Shore	1.71
Nantasket Beach	1.02
Quincy Shore	2.19
Total	13.08

Lengths of Sea Walls	Miles
Lynn Shore	1.30
Revere Beach at Northern Circle	.08
Revere Beach at Eliot Circle	.15
Revere Beach, shore protection, bath house shelter and Revere Street shelter	.29
Revere Beach, shore protection, south of Northern Circle	.28
Winthrop Shore, bridge to Great Head	1.04
Winthrop Shore, bridge to Grover's Cliff	.23
Quincy Shore Reservation, shore protection south of Webster Street	1.08
Quincy Shore Reservation, southerly end	.15
Nantasket Beach Reservation	.50
Winthrop Parkway, near Leverett Avenue, Revere and Winthrop Broad Sound Avenue to Sewall Avenue	.52
Total	5.62

Miles of River Bank	Miles
Charles River	33.34
Mystic River	8.16
Neponset River	15.86
Alewife Brook	4.50
Total	61.86

Bridges	
Reinforced concrete bridges	16
Steel bridges	11
Wooden bridges	8[4]
Drawbridges	6
Footbridges	12
Total	53

[1]Five additional lights, June 1 to December 1.
[2]Five additional lights in summer.
[3]Thirty-three electric all night, May 1 to October 31. Thirty-three electric to midnight, June 1 to September 30. Six all night, May 1 to September 30.
[4]One-half of Wellington bridge rebuilt with concrete girders.

Culverts

Reinforced concrete and other masonry culverts	42

Dams

Beaver Brook Reservation, small wooden dams	2
Charles River Reservation, wooden dam at Waltham, 220 feet in length	1
Charles River Reservation, Charles River Basin tidal dam, 1,200 feet in length	1
Charles River Reservation, small stone dam in branch below Washington Street, Newton Lower Falls	1
Charles River Reservation, reinforced concrete dam at Washington Street, Newton Lower Falls, 175 feet in length	1
Furnace Brook Parkway, reinforced concrete dam upstream from Black's Creek Bridge	1
Hemlock Gorge Reservation, small stone masonry dam with stop planks, in gorge	1
Hemlock Gorge Reservation, small reinforced concrete dam on East Branch of river, Newton Upper Falls	1
Hemlock Gorge Reservation, reinforced concrete dam in Charles River at Boylston Street, Newton Upper Falls, 90 feet in length	1
Mystic River Reservation, reinforced concrete tidal dam at Cradock Bridge, 100 feet in length; weirs 400 feet in length	1
Total	11

Lock Gates, Sluice Gates and Tide Gates

Charles River Reservation, Charles River Basin tidal dam, 6 lock gates, 13 sluice gates, 43 tide gates.
Mystic River Reservation, Cradock Bridge tidal dam, 2 lock gates, 4 sluice gates, 8 tide gates.
Quincy Shore Reservation, 8 tide gates.
Revere Beach Parkway, 1 tide gate.

Police Signal System	Miles
Blue Hills Division	30½
Middlesex Fells Division	18¼
Nantasket Beach Division	2½
Charles River Reservation	10
Fresh Pond Parkway	½
Total	61¾

Revere Beach Division police signal system, serving 11 miles of parkways and reservations, and Middlesex Fells Division, serving 1½ miles of parkway, on wires leased from the New England Telephone and Telegraph Company.

REPORT OF THE DIRECTOR AND CHIEF ENGINEER OF WATER DIVISION

Davis B. Keniston, *Commissioner, Metropolitan District Commission.*

Sir:— I respectfully submit the following report of the construction and maintenance operations of the Water Division for the calendar year 1926.

ORGANIZATION

The number of supervising, clerical and engineering employees was 53. A labor force including 292 employees at the beginning and 290 at the end of the

year was engaged in maintaining and operating the reservoirs, aqueducts, pipe lines, hydro-electric and pumping stations and in doing miscellaneous construction work. The average number of employees of all classes for the entire year was 362.

METROPOLITAN WATER DISTRICT AND WORKS

The Water District now includes 20 municipalities with an area of about 174 square miles and population as of July 1, 1926, of 1,424,480. The water works lands include an area of about 19,000 acres, of which about 2,000 acres have been planted with pine trees. The works include 9 storage reservoirs with 200 square miles of tributary watershed, a total storage capacity of 80 billion gallons and water surface of 8,600 acres; 60 miles of aqueducts; 2 hydro-electric power stations of a capacity of 7,000 horse power; 16 miles of high-tension power transmission line; 5 distribution pumping stations with a combined equipment of 6,560 horse power and pumping capacity of 280 million gallons a day; 12 distribution reservoirs with a capacity of 2½ billion gallons, and 146.28 miles of distribution mains. The consumption of water from the Metropolitan Water Works during the year by the 18 municipalities regularly supplied was 47,517,455,000 gallons, equivalent to an average daily consumption of 130,184,800 gallons or 98.2 gallons per capita for a population of 1,326,080 in the district supplied.

CONSTRUCTION

Pumping Equipment, Northern High Service

The work of installing the additional pumping equipment at the Spot Pond Station in Stoneham has been completed. Early in the year, while preparing for the official duty trial of the new engine, it was discovered that both the high and the low pressure steam cylinders were so badly scored that it was necessary to rebore them. This work was done and the new pistons were fitted in June.

The official duty trial of 12 hours duration was made October 6, and during this period work was performed at the rate of 141.223 million foot pounds per 1,000 pounds of saturated steam supplied to the engine at a pressure of 150 pounds per square inch.

The machine is a horizontal cross-compound crank and fly-wheel condensing pumping engine of the opposed type, with fly-wheel between the steam and water ends, and has a capacity to deliver 20 million gallons in 24 hours against a head of 150 feet. It was built and installed by the Worthington Pump and Machinery Corporation for the sum of $68,300.

Weston Aqueduct Supply Mains

The work begun in 1925 by the C. & R. Construction Company of furnishing and laying riveted steel pipes 60 inches in diameter in Arlington and Somerville was suspended early in February because of unfavorable weather, was resumed April 12 and was completed June 16. The total length of main pipe line laid on this section of the Weston Aqueduct Supply Mains is 7,400 feet and the total value of the contract work $228,229.28.

Future Weston Aqueduct Supply Mains on River Street and Western Avenue Bridges

In connection with the construction by the Parks Division of the new bridges over the Charles River at River Street and Western Avenue between Boston and Cambridge, it was deemed advisable to lay four lines of 30-inch steel water pipes under the sidewalks at these bridges for use several years hence as a part of an additional Weston Aqueduct Supply Main. These pipes were furnished and laid by the C. & R. Construction Company between September 13 and October 30 as a part of the contract for the Watertown Branch of the Weston Aqueduct Supply Mains. The length of the pipe laid on the bridges is 1,481 feet and the cost of the work was $17,748.40.

Northern High Service Pipe Lines

The work begun in 1925 by Cenedella & Company of furnishing and laying riveted steel pipes 38 inches in diameter in Malden, Melrose and Stoneham was suspended early in February because of unfavorable weather, was resumed March 15, and was completed September 18. The total length of main pipe line laid is 7,300 feet and total value of the contract work, including $18,800 for rock excavation, is $145,074.81. For this pipe line easements were taken in 8,597 square feet of city of Malden park land in 1925.

Southern High Service Pipe Lines

The surveys and plans for the proposed pipe line from Chestnut Hill Pumping Station to the Arborway, at Pond Street in Jamaica Plain, have been nearly completed. A contract that will amount to about $30,000 was made with the Feil Manufacturing Company of Chicago, September 16, for furnishing the gate valves required for the pipe line, and this work was well advanced at the close of the year.

Improvement of Service in Belmont and Watertown

The work of improving the service in Belmont and Watertown, begun in 1925, has been continued. A contract was made with the C. & R. Construction Company, July 20, for furnishing and laying riveted steel pipes 30 inches in diameter for a branch line 5,770 feet in length from the Metropolitan Water Works main in Central Street, Waltham, to the Watertown distribution main in Pleasant Street, in order to supply the low area along the Charles River in Watertown from the Weston Aqueduct Service instead of from the Southern High Service as at present. At the close of the year the pipe line had been laid and tested but some resurfacing work remains to be done to complete the contract.

The value of the work done on this branch line under this contract is $64,127. For this line easements were taken in 71 square feet of land of Robert R. and Mary E. Wagner, and in 993 square feet of Boston & Maine Railroad land in Waltham.

On June 26 the local distribution service on the hills in the southerly portion of Belmont and the northerly portion of Watertown was separated from the service in the lower sections of the towns by closing several controlling gate valves in each town and since that time the pressure on the 20-inch Metropolitan Water Works main supplying these districts has been maintained about 60 feet higher than formerly by booster pumping, using the equipment in the city of Newton emergency pumping station located near the Waban Hill Reservoir, from which these districts were formerly supplied.

Meters and Connections

During the year Venturi meters were installed in the new 60-inch Weston Aqueduct Supply Main and on the connection to the local distribution pipes near the Mystic Shops in Somerville. An unmetered connection was made at this place between the new main and the old Mystic Water Works 30-inch force main. A 12-inch and a 20-inch unmetered connection were also laid from the new 38-inch Northern High Service Mains in Fellsway East near Border Road and at Highland Avenue.

The total expenditure for meters and connections during the year was $1,303.78.

Improving Wachusett Watershed

The Holden Textile Company's property at Dawsonville in Holden, including 13 tenement houses, the mill structure and 16 acres of land with appurtenant water rights, was purchased on June 29 with the special appropriation made by the Legislature for the protection of the Wachusett supply.

Extensions of the Works

Appropriations have been requested for installing a new pumping engine at the Arlington Pumping Station and for the making of surveys and construction plans for an additional Weston Aqueduct Supply Main, and an additional Northern High Service Pipe Line from Malden to Winthrop.

MAINTENANCE

Precipitation and Yield of Watersheds

The precipitation was from 1.5 to 2.0 inches above normal on the Wachusett watershed in February, October and November; about normal in December but during each of the other months it was from 1 to 2 inches below normal. On the Sudbury and Cochituate watersheds the precipitation was above normal in August, but with this exception varied from the normal about the same as on the Wachusett watershed.

The total precipitation for the year was 39.31 inches on the Wachusett watershed, which is 5.74 inches below the average for 30 years; 41.41 inches on the Sudbury watershed, which is 3.06 inches below the average for 52 years, and 40.41 inches on the Cochituate watershed, which is 4.64 inches below the average for 64 years.

The average daily yield per square mile from the watersheds was 826,000 gallons from the Wachusett, which is 24 per cent below normal; 746,000 gallons from the Sudbury, which is 23 per cent below normal, and 837,000 gallons from the Cochituate, which is 10 per cent below normal. These yields make 32.8 billion gallons on the Wachusett watershed and 7.5 billion gallons on the portion of the Sudbury watershed above the dam of Framingham Reservoir No. 3. As the water in storage in the reservoirs on these areas was reduced by 8.9 billion gallons, there was a total of 49.2 billion gallons supplied for all purposes from the areas from which the Metropolitan supply was obtained in 1926. Of this total supply 1.8 billion gallons was used by the city of Worcester, towns of Clinton and Framingham, the Westborough Insane Hospital and for maintaining a flow in the Nashua River below the Wachusett Dam, and the remainder was supplied to the Metropolitan District.

Storage Reservoirs

The capacities of the storage reservoirs of the Metropolitan Water Works, the elevation of the water surfaces and the quantity of water stored in each reservoir at the beginning and at the end of the year are shown by the following table: —

Storage Reservoirs	Elevation[1] of High Water	Capacity (Gallons)	Jan. 1, 1926		Jan. 1, 1927	
			Elevation[1] of Water Surface	Amount Stored (Gallons)	Elevation[1] of Water Surface	Amount Stored (Gallons)
Cochituate Watershed:—						
Lake Cochituate[2] . . .	144.36	2,097,100,000	142.75	1,718,200,000	143.70	1,940,600,000
Sudbury Watershed:—						
Sudbury Reservoir . .	260.00	7,253,500,000	256.30	5,730,600,000	257.01	6,017,600,000
Framingham Reservoir No. 1	169.32	289,900,000[3]	167.79	220,000,000	167.83	221,700,000
Framingham Reservoir No. 2	177.87	529,900,000[3]	177.66	553,300,000	176.08	485,200,000
Framingham Reservoir No. 3	186.74	1,180,000,000[3]	185.23	1,077,500,000	184.67	1,032,700,000
Ashland Reservoir. . .	225.21	1,416,400,000	224.45	1,374,600,000	224.51	1,377,900,000
Hopkinton Reservoir . .	305.00	1,520,900,000	304.13	1,466,500,000	304.16	1,468,300,000
Whitehall Reservoir . .	337.91	1,256,900,000	336.66	1,015,200,000	337.14	1,107,200,000
Farm Pond	159.25	167,500,000	159.55	183,700,000	159.49	180,500,000
Wachusett Watershed:—						
Wachusett Reservoir . .	395.00	64,968,000,000	373.39	39,594,200,000	363.26	30,679,200,000
Totals	—	80,680,100,000	—	52,933,800,000	—	44,510,900,000

[1] Elevation in feet above Boston City Base.
[2] Excluding Dudley Pond which was abandoned Apr 3, 1916.
[3] To top of flash-boards.

The table shows the total storage which could be drained from the reservoirs. Special provisions would be necessary, however, to draw about 10 billion gallons of this storage for consumption, as it is below the outlet channels which can be conveniently used for regular service.

Wachusett Reservoir

At the beginning of the year there was 39.6 billion gallons of water stored in Wachusett Reservoir, and the surface of the water at elevation 373.39 was 21.61 feet below designed high-water line, elevation 395. The lowest stage reached in the early part of the year was elevation 372.48 on February 14, when there was 38.7 billion gallons in storage. With the melting of the snow and the spring rains the quantity of water in storage reached a maximum for the year of 50 billion gallons on May 24, when the reservoir had filled to elevation 383.25 and the water was 11.75 feet below high-water line. This was the minimum quantity of water stored at time of maximum storage for any year since the reservoir first filled, in 1908, and was 3.5 billion gallons less than for the maximum stage in 1925.

From May 24 to November 9 the yield of the watershed was much less than the draft for consumption and the water was drawn down to elevation 363.74. From November 9 to the end of the year the yield of the watershed was not quite equal to the draft and on December 30 and 31, the water was 31.82 feet below high-water line at elevation 363.18 and the reservoir contained 30.6 billion gallons, the minimum storage since the first filling of the reservoir. On January 1, 1927, the water was 0.08 of a foot higher than on December 31, and the loss in storage for the year 1926 was 8.915 billion gallons.

In compliance with General Laws chapter 92, section 14, 626,600,000 gallons of water was discharged from the reservoir to maintain a flow in the Nashua River below the dam.

From January 14 to 23, inclusive, on three days in February and March, and from June 14 to December 11, inclusive, the town of Clinton pumped 114,400,000 gallons of water from the Metropolitan supply under the provisions of chapter 348 of the Acts of 1923.

The city of Worcester pumped 258,600,000 gallons of water from the reservoir from October 4 to November 27, inclusive.

The fencing of the reservoir lands, begun in 1921, was continued and 4.14 miles of fence was constructed during the year, and about 27 miles of fence or 40 per cent of the work is now completed.

The Wachusett Dam and adjacent structures, the exposed reservoir bed and marginal lands and departmental buildings thereon have been given the usual care, and the repair work in the gate-chamber wells has been completed. The motor boat, used on the reservoir since 1907, was replaced with a new boat. The barn at the Cook place was struck by lightning and entirely destroyed by fire on October 13.

Sudbury Reservoir and Framingham Reservoir No. 3

At the beginning of the year the water in Sudbury Reservoir was at elevation 256.3 and 2.7 feet below the crest of the overflow at the dam. It was kept several feet below the crest until August so that repairs could be made at the Southborough swimming pool. From August 2 to December 4, while the flash-boards were on the overflow, the water was held about one-half a foot above the crest. From November 1 to 16, while alterations were being made in the protective equipment in the Sudbury Power Station, 236.5 million gallons of water was discharged over the crest of the overflow into Framingham Reservoir No. 3 for supplying the Sudbury Aqueduct. From December 4 to the end of the year the water in Sudbury Reservoir was held about 3 feet below the crest of the overflow and was at elevation 257.01 at the end of the year.

At Framingham Reservoir No. 3 the flash-boards were kept on the overflow at the dam during the entire year. The water in the reservoir was at elevation 185.23 at the beginning of the year and at elevation 184.67 at the end of the year.

The total quantity of water stored in these reservoirs at the end of the year exceeded the quantity stored at the beginning of the year by 243,800,000 gallons.

The reservoirs, dams and other structures, the walks, drives and improved grounds and outlying reservoir lands received the usual care.

Framingham Reservoirs Nos. 1 and 2, Ashland, Hopkinton and Whitehall Reservoirs and Farm Pond

No water was drawn for consumption from the 47 square miles of the Southern Sudbury watershed tributary to Framingham Reservoirs Nos. 1 and 2, Ashland,

Hopkinton and Whitehall reservoirs or from Farm Pond. Not less than 1,500,000 gallons of water a day has been wasted from Framingham Reservoir No. 1 into the Sudbury River below Dam No. 1, as required by Acts of 1872, chapter 177. During the summer the flow of the river at Dam No. 1 was regulated as closely as possible to the minimum rate allowed by law so that the sanitary conditions along the river could be carefully investigated under this regulation of the flow in the stream.

Although the water from this portion of the works has not been used because of its poor quality, it has been necessary to employ the regular force to operate the waste gates and care for the buildings and grounds at these reservoirs.

From September 10 to November 12, inclusive, the town of Hopkinton pumped 666,000 gallons of water from Whitehall Reservoir to supplement its local supply.

At the close of the year there were on the private lands surrounding Whitehall Reservoir 88 camps, and during the summer there were 4 motor boats, 93 row boats and 24 canoes in use on the reservoir and fishing in the waters thereof was allowed without permit. On November 30 the regulations permitting boating on and fishing in the reservoir were terminated so that the water would be safe for use in case of a shortage of the regular supply.

Under rights reserved by legislation the Boston & Albany Railroad took approximately 73,200,000 gallons of water and the New York, New Haven & Hartford Railroad took approximately 64,200,000 gallons of water from Farm Pond for use in locomotives.

Lake Cochituate

The water in Lake Cochituate was maintained near high-water line except in February and March, when it was drawn down 3 to 4 feet in anticipation of the large yield from the melting snows and spring rains.

No water was drawn from the lake for consumption during the year but the regular force was maintained to operate waste gates and care for the buildings, grounds and surface water drains.

At the close of the year there were on the private lands surrounding the water works margins at Lake Cochituate 215 cottages, 66 garages and 4 stables.

Aqueducts

The Wachusett, Weston and Sudbury aqueducts were in service and the Cochituate Aqueduct out of service during the entire year.

Water was drawn from the Wachusett Reservoir through the Wachusett Aqueduct on 293 days. The total quantity of water discharged is 40,649,300,000 gallons, equivalent to an average of 111,368,000 gallons per day for the entire year, and was used to generate electric energy at the power station before being discharged into the aqueduct.

The Westborough State Hospital pumped 81,892,000 gallons of water from the aqueduct at the terminal chamber during the year. This is equivalent to a consumption of 224,400 gallons per day.

The Weston Aqueduct was used on 358 days and delivered to the Weston Reservoir and Supply Lines 34,455,500,000 gallons of water, an average of 94,398,630 gallons per day. With the exception of 1,496,300,000 gallons of water by-passed around the water wheels from November 1 to 15, inclusive, this water was used for generating electric energy.

The Sudbury Aqueduct was in continuous use with the exception of two hours, from 1 P.M. to 3 P.M. December 17, when it was shut off to remove the bulkhead from the intake chamber from which the town of Framingham pumped 504,600,000 gallons of water for its supply. During the year 11,637,700,000 gallons of water, an average of 31,884,110 gallons per day, was supplied to Chestnut Hill Reservoir through the Sudbury Aqueduct.

No water was supplied for consumption through the Cochituate Aqueduct, which has been drained most of the time for minor repairs.

Early in the year, 4,785 square feet of Cochituate Aqueduct land, located at the junction of Central Street and Linden Street in Wellesley, was sold with a reservation retaining an easement for the use of the land for water works purposes.

The regular maintenance force has cared for the structures and lands along the aqueducts in the usual manner.

Protection of Water Supply

A sanitary inspector, two watershed inspectors and three watchmen were employed throughout the year to inspect the condition of premises on the watersheds and ice cutting operations and to prevent pollution of the water in the reservoirs.

The sewage from the Worcester County Training School in West Boylston was purified by filtration throughout the year and the sewage from the summer cottages near Gates Terrace, at Sterling Junction, was purified from May 1 to November 13, inclusive.

The surface water from the village of Sterling, the brook near Maple Street in Marlborough and Pegan Brook in Natick has been purified by filtration with the exception of large flows in excess of the capacity of the filters, which was sterilized with calcium hyperchlorite.

The Pegan pumping station was operated on 220 days and 268,913,000 gallons of water was pumped to the filters, an average of 736,748 gallons per day for the entire year. The cost of operating the station, including the care of the grounds and filters, was $6,582.47 for labor, $555.34 for fuel and $1,155.77 for supplies and repairs, a total of $8,293.58 and $30.84 per million gallons filtered. The fuel cost per million foot gallons was 15.87 cents.

The cost of protecting the water supply by filtration and chlorination was $944 on the Wachusett watershed, $4,800 on the Sudbury watershed and about $8,300 on the Cochituate watershed as given above in detail.

The usual work of caring for the ditches, culverts and watering places and improving brook channels was accomplished.

The cost of maintaining the 37 miles of drainage ditches on all of the watersheds was about $9,500, considerable repair work being necessary, and the expenditure for the construction of new ditches and improvement of brook channels was about $4,500.

Early in the year measures were taken to stop bathing in the outlying ponds in the Wachusett watershed, which was increasing each year and becoming a menace to the purity of the water supply, and especially so on account of the low stage of the water in the reservoir. The results of this action were entirely satisfactory.

Clinton Sewerage Works

The works for disposing of the sewage of the town of Clinton were operated throughout the year as required by Acts of 1898, chapter 557, and 487,674,000 gallons of sewage was pumped to the filters, an average of 1,336,000 gallons a day.

The cost of operating the pumping station was $2,848.70 or $5.84 per million gallons of sewage pumped, equivalent to 11.7 cents per million foot gallons, about 36 per cent of the cost being for labor. The cost of operating the filters was $9,701.95 or at the rate of $19.89 per million gallons.

Forestry

About 24,000 white, red and mugho pine and Norway spruce seedlings 2 to 5 years old, received from State nurseries, were planted along the open channel of the Wachusett Aqueduct in Marlborough and Southborough, on the marginal land of the Wachusett Reservoir in West Boylston and the grounds at the dam in Clinton. About 1,600 white spruce trees 4 to 6 feet high, from the Wachusett Section nursery, were planted on recently drained areas in Boylston and West Boylston.

About 11,500 red pine seedlings, from the Sudbury Section nursery, were set out in Southborough and 10,000 red pine and 10,000 white pine seedlings 2 years old, received from the State nurseries, were set out in the Sudbury Section nursery.

About 5,000 Corsican and 10,000 Jack pine seedlings 4 years old, from the State nurseries, were set out at Weston Reservoir and 10,000 white pine seedlings, from the State nurseries, were set out at Spot Pond.

Fire guards and forest roads have been mowed and improvement thinnings and clearings have been made about as usual, and considerable work has been done to protect the plantings from the pine-tree weevil and trees on selected areas from insects.

The total expenditure for forestry was $23,480.66, of which $2,967.13 was expended for protecting the trees from insects.

Hydroelectric Service

During the year 11,280,248 kilowatt hours of electric energy were delivered from the hydroelectric stations operated by water drawn from the Wachusett and Sudbury reservoirs.

The total value of this energy at contract prices and including rentals of $182.20 for transmission line locations is $63,323.15. The total expense charged to operation of both stations and transmission lines is $56,740.72, leaving a profit from the operation of the stations of $6,582.43, or only $0.583 per thousand kilowatt hours. This small profit is due principally to the unusual repairs, costing about $4,800 on Unit No. 2, and the reduced output at the Wachusett Station on account of the low water in the reservoir, and to the reduced output and increased expense of three shift operation and of the expenditure of about $1,250 for rearrangement of protective apparatus at the Sudbury Station on account of the increased quantity of water supplied to the District by gravity through the Weston Aqueduct since the completion of the new supply main for the northern low service.

The Wachusett Power station was operated on 293 days. The statistics for the year 1926 are as follows: —

Total energy developed (kilowatt hours)			7,155,600
Energy used at power station (kilowatt hours)			165,718
Available energy (kilowatt hours)			6,989,882
Water used (gallons)			40,649,300,000
Average head (feet)			78.3
Energy developed per million foot gallons (kilowatt hours)			2.248
Efficiency of station (per cent)			71.54
Credits:			
Energy sold New England Power Company and Edison Electric Illuminating Company, 6,794,530 kilowatt hours at $0.0053		$36,011.01	
Deduction of 2 per cent as provided in contract, 135,891 kilowatt hours at $0.0053		720.22	
		$35,290.79	
Energy furnished Clinton Sewerage Pumping Station, 195,352 kilowatt hours at $0.0053		1,035.37	
Rental, transmission line location		182.20	$36,508.36
Charges:			
Superintendence		$1,537.74	
Labor, operating station		9,605.31	
Repairs and supplies:			
Power station	$6,534.84		
Transmission line	46.57	6,581.41	
		$17,724.46	
Taxes		3,000.00	
Administration, general supervision, interest and sinking fund		11,200.37	31,924.83
Profit			$4,583.53
Cost of available energy per thousand kilowatt hours			$4.567

The Sudbury power station was in service on 343 days. The statistics for the year 1926 are as follows: —

Total energy developed (kilowatt hours)		4,349,280
Energy used at power station (kilowatt hours)		58,914
Available energy (kilowatt hours)		4,290,366
Framingham Reservoir No. 3 service:		
Water used (gallons)		11,289,800,000
Average head (feet)		64.33
Weston Aqueduct service:		
Water used (gallons)		34,455,500,000
Average head (feet)		35.71
Energy developed per million foot gallons (kilowatt hours)		2.223
Efficiency of station (per cent)		70.8
Credits:		
Energy sold Edison Electric Illuminating Company of Boston, 4,290,366 kilowatt hours at $0.00625		$26,814.79
Charges:		
Superintendence	$1,610.44	
Labor, operating station	12,450.72	
Repairs and supplies	2,742.08	
	$16,803.24	
Taxes	1,860.00	
Administration, general supervision, interest and sinking fund	6,152.65	24,815.89
Profit		$1,998.90
Cost of available energy per thousand kilowatt hours		$5.784

Distribution Pumping Stations

The total pumpage at the five distribution pumping stations during 1926 was 25.087 billion gallons or 9.792 billion gallons less than in 1925. This reduction of nearly 27 million gallons a day resulted from supplying most of the Northern Low Service District by gravity through the new Weston Aqueduct Supply Main.

At the beginning of the year there was 1,800 net tons of bituminous coal and 80 tons of anthracite screenings on hand at the pumping stations. During the year 8,500 tons of bituminous coal and 480 tons of anthracite screenings were received. At the close of the year there was 1,085 tons of bituminous coal and 75 tons of anthracite screenings on hand.

At Chestnut Hill Pumping Station No. 1, Engine No. 16 was operated continuously with the exception of a few short interruptions for repairs and pumped nearly all of the water. The dependent boiler feed pump on the engine was entirely rebuilt and now operates satisfactorily. Extensive repairs were made on Engine No. 3 and the electric lighting engine and independent boiler feed pump at this station were thoroughly overhauled. The boilers were washed out and inspected regularly and new non-automatic water glass fittings were installed, grates were repaired, seats and discs of blow-down valves were renewed, stop valves were repacked, the economizer was bored out and washed down and a new gallery was erected from which to blow the bottom headers with compressed air.

At Chestnut Hill Station No. 2, Engine No. 12 was operated continuously during the year except when shut down for occasional ordinary repairs and for the installation of a new dependent triplex boiler feed pump in place of the old single acting pump that was attached to the engine when installed and which caused objectionable water ram and prevented accurate registration of the Venturi feed-water meter. The new arrangement has given perfect satisfaction. The governor of Engine No. 5 was thoroughly overhauled. The boilers and economizers at this station were kept in first class condition; 16 broken solid stay bolts in boiler No. 16 were replaced with Tate flexible stay bolts and a door was installed in the flue from boilers Nos. 5, 6 and 7 to facilitate the removal of the soot. The boiler room drain was extended 377 feet with 8-inch cast-iron pipe to obtain a free outlet.

The blacksmithing, carpentry and machinists' work for all of the pumping stations has been done at the Chestnut Hill shops and considerable work of this nature has also been done at these shops for the other sections of the Water Division.

At Spot Pond Station the new engine, No. 17, was put into regular service, necessary repairs were made on engines Nos. 8 and 9, and new non-automatic water gages were installed on the boilers which have been regularly maintained and inspected. A new floor was laid in the coal shed.

Some repairs have been made on Engine No. 10 at the Arlington Station and on Engine No. 14 at the Hyde Park Station, and the boilers at both of these stations have been maintained in the usual manner.

The engine duties at the various stations, based on plunger displacement and including the coal used in generating the steam for heating and lighting the stations were as follows: —

Chestnut Hill Station No. 1, 127,112,000 foot pounds per 100 pounds of mixed coal averaging 14,550 British thermal units per pound.

Chestnut Hill Station No. 2, 140,219,000 foot pounds per 100 pounds of mixed coal averaging 14,495 British thermal units per pound.

Spot Pond Station, 115,882,000 foot pounds per 100 pounds of bituminous coal averaging 14,570 British thermal units per pound.

Arlington Station, 71,456,000 foot pounds per 100 pounds of mixed coal averaging 13,750 British thermal units per pound.

Hyde Park Station, 63,553,000 foot pounds per 100 pounds of mixed coal averaging 13,700 British thermal units per pound.

Distribution Reservoirs

The locations, elevations, and capacities of the distribution reservoirs of the Metropolitan Water Works are shown by the following table: —

Distribution Reservoirs and Locations	Elevation of High Water[1]	Capacity in Gallons
Low Service:		
Spot Pond, Stoneham and Medford	163.00	1,791,700,000
Chestnut Hill Reservoir, Brighton district of Boston	134.00	300,000,000
Weston Reservoir, Weston	200.00	200,000,000
Mystic Reservoir, Medford	157.00	26,200,000
Northern High Service:		
Fells Reservoir, Stoneham	271.00	41,400,000
Bear Hill Reservoir, Stoneham	300.00	2,450,000
Northern Extra High Service:		
Arlington Reservoir, steel tank, Arlington	442.50	2,000,000
Southern High Service:		
Fisher Hill Reservoir, Brookline	251.00	15,500,000
Waban Hill Reservoir, Newton	264.50	13,500,000
Forbes Hill Reservoir, Quincy	192.00	5,100,000
Forbes Hill Standpipe, Quincy	251.00	330,000
Southern Extra High Service:		
Bellevue Reservoir, steel tank, West Roxbury district of Boston	375.00	2,500,000
Total	—	2,400,680,000

[1]Elevation in feet above Boston City Base.

By arrangement with the city of Chelsea a portion of the maintenance of its reservoir on Powder Horn Hill is assumed by the Metropolitan Water Works, and the reservoir is used when necessary in connection with the northern high-service supply. This reservoir has a capacity of 1,000,000 gallons with high-water line at elevation 196.6. The reservoir was in service from January 1 to March 29 and from December 9 to the end of the year, and was kept full of water for emergency use the remainder of the time.

The city of Malden's standpipe on Waitt's Mount was under the control of the Division and kept full of water for emergency use until the new duplicate northern high-service pipe line from Fells Reservoir to Pleasant Street, in Malden, was put into regular service. On November 20 the standpipe was turned back to the city and its use by the Water Division was terminated.

The tower surrounding the City of Boston's Orient Heights standpipe in East Boston was burned June 13, and on June 18 the standpipe was shut off and has been out of service ever since, with the Orient Heights district entirely dependent upon a single Metropolitan supply main extending back about 2½ miles to the duplicate mains in Fenno Street at Broadway, Revere.

The Weston Reservoir was in continuous use during the year and was maintained in the usual manner by the regular force of a subforeman and 3 laborers, which has operated the screens and gates and cared for the grounds and drainage ditches including about a mile of aqueduct extending below the reservoir to the terminal chamber, where the supply mains begin.

The Chestnut Hill Reservoir has been maintained as usual. The Bradlee Basin was in continuous service. The Lawrence Basin was in service from April 27 to July 24, and from September 28 to the close of the year. In January the sluice gates in the intermediate gate chamber were equipped with new rustless steel stems, as the old stems installed in 1868 when the gate chamber was constructed having been weakened by corrosion were unreliable.

April 18 a 7-passenger touring car occupied by 4 men was driven into Bradlee Basin by the owner who was learning to drive. The men were rescued by Metropolitan District police officers, who also removed the car from the reservoir.

In June many dead fish were removed from the reservoir but the cause of their death was not discovered.

During a heavy rain July 24 the drain on the northeasterly side of Lawrence Basin became clogged and surface water overflowed into the reservoir.

About 1,200 ducks and 700 gulls came to the reservoirs during the year and about 500 shots were fired to drive them away.

The Water Division paid the Park Division $5,728.80 for policing at Chestnut Hill Reservoir.

The walk around the reservoir was resurfaced with stone dust for a length of 3,300 feet, the riprap slopes of the basins and the driveways were repaired and grass land and shrubbery were cared for as usual.

The Fisher Hill and Waban Hill reservoirs, located near the Chestnut Hill Reservoir, have been maintained by the Chestnut Hill force. Both of these reservoirs have been in continuous service. The work of enclosing the Fisher Hill Reservoir lot by a fence was begun in November and the reinforced concrete posts have been set for a distance of about 400 feet on the westerly side.

Spot Pond and the Fells and Bear Hill reservoirs have been maintained in the usual manner by a subforeman and 7 laborers. The screens and gates at these reservoirs have been operated as required and temporary screen grooves were installed in the Fells Reservoir gate-house at the inlet to the new 38-inch main.

Some grading was done at Spot Pond at the beach at Woodland Road, to keep the street drainage out of the pond. About 5,500 ducks and 1,700 gulls came to the pond during the year. They were driven off by firing gun shots without attempting to kill them.

The Water Division paid the Park Division $1,155.14 for policing the Water Works lands at these reservoirs.

The Mystic Reservoir, which is about 10 feet below the hydraulic grade maintained on the northern low-service pipe lines connecting with the reservoir, was kept ready for emergency use throughout the year. The granite and brick masonry on the northerly, southerly and easterly inside slopes of the reservoir was repointed, some resurfacing was done on the roadway around the reservoir and the gate-house was painted. On July 8 Michael S. Donahue, 8 years of age, of Somerville, climbed over the guard fence which surrounds the reservoir and was drowned.

At the Arlington and Bellevue reservoirs the usual care has been taken of the masonry towers, steel tanks and surrounding grounds.

The tower at Arlington was open to visitors, under the supervision of the Park Division, on Sundays and holidays during pleasant weather from July 18 to October 24, inclusive, and the Bellevue tower was open on Sundays and holidays from January 3 to November 28, inclusive.

Distribution Pipe Lines

The last section of the new Weston Aqueduct supply main, 60 inches in diameter, extending from Arlington Center to Boston Avenue at the Medford-Somerville boundary line, and the new low-service main, 48 inches in diameter, extending from this point through Boston Avenue to the 48-inch low-service main in College Avenue, were put into service February 15.

On April 10 the 36-inch connection between the new supply main and the old 30-inch Mystic mains was put into service. These Mystic mains, extending about 3,000 feet easterly from this connection to the Mystic River, were cleaned for a total length of 5,354 feet under the contract made in 1925 with the National Water Main Cleaning Company. One of these old mains was laid to the reservoir only in 1864; the other, laid in 1878, was connected with the 24-inch and 30-inch supply mains that extend easterly from the reservoir to Charlestown. The force main laid in 1864, as far as the reservoir only, has been extended about 429 feet and connected with the Charlestown supply mains, and since June 14 water has been supplied through both of these old Mystic mains from the new supply main. The new Weston Aqueduct supply line has been in full operation with gates wide open since July 9, delivering from 33 to 37 million gallons of water daily, according to the requirements of the service.

On July 20 a contract was made with the C. & R. Construction Company for furnishing and laying 16-inch and 20-inch and relaying 12-inch cast-iron pipes in Lynn for maintaining the northern high-service supply for Nahant and Swampscott. Most of this pipe was lined with cement at the foundry by the centrifugal process. Under this contract 2,229 feet of 20-inch, 1,828 feet of 16-inch and 627 feet of 12-inch pipes were laid. The new lines were connected with the existing lines by the Water Division maintenance force. The new 16-inch and 20-inch lines were put into service October 22 and the portion of the existing 12-inch lines in Washington Street that had become unsafe on account of damage by electrolysis was relaid between October 22 and November 9.

During the year the 6-inch blow-off lines from the 20-inch northern high-service main laid in 1922 across the Mystic River near Combination Park, in Medford, were extended 24 feet on the north bank in Somerville and 12 feet on the south bank in Medford to carry them beyond the mud flats. The easterly 20-inch southern high-service main to Watertown was raised for a distance of 220 feet between Lake Street and Washington Street, in Brighton, to provide for the construction of a sewer.

A 16-inch by-pass was laid around the southern high-service connection with the city of Quincy pipes in Beal Street at Summit Avenue, and a capped blow-off from the southern high-service 36-inch main in Morton Street, near the old entrance to Franklin Park, was extended and connected with a new drain built at this place.

On June 3 the pressure on the southern extra high-service line supplying the higher districts in Milton and Hyde Park was increased by shutting the section of 20-inch pipe line in Hyde Park Avenue south of the pumping station off from the southern high service and using it as a part of the southern extra high-service system.

In the latter part of the year a 20-inch connection was made from the Metropolitan 48-inch main in the Fellsway to the Somerville water main in Middlesex Avenue near the new Ford Motor Company plant. A 20-inch Venturi meter with 5¼-inch throat and a 12-inch by-pass were installed on this connection, which was paid for by the city of Somerville but had not been put into service at the end of the year.

During the year four breaks occurred in the Distribution Section pipe lines, two of which were caused by contractors blasting operations. January 6 a break occurred in the 12-inch northern high-service pipe line in Washington Street at Farrar Street in Lynn, which was caused by electrolysis; the cost of repairs was $187.68. January 17 the 36-inch southern high-service main in Morton Street at Canterbury Street in West Roxbury was broken by a contractor blasting near the pipe line; the cost of repairs was $675.91. April 20 the 36-inch northern high-service main in the Fells Reservation was broken by the contractor laying the new line at a point about 800 feet below the Fells Reservoir; the cost of repairs, which was paid by the contractor in this case, was $518.81. September 20 a break occurred in the 48-inch Weston Aqueduct supply main in Commonwealth Avenue at Auburn Street in Newton, which flooded the street and low land and house cellars in the vicinity, doing considerable damage to private property; the cost of repairing this break and the streets was $4,758.84.

During the year 56 joint leaks were repaired in cast-iron pipe lines, of which 46 were of lead, 9 were of wooden staves and 1 was of lead hydrotite. Repairs were

also made of 2 joint leaks in Calomine pipe and of 4 leaks in lead service pipes. The total cost of repairing these leaks was $9,079.19, of which $4,846.53 was for 10 flexible joints in the older 12-inch southern extra high-service line under the Neponset River in Hyde Park. An attempt to repair these leaks with diving equipment between January 25 and March 9 was a failure, but the work was successfully accomplished between April 27 and June 4 with diving and dredging equipment and the use of special clamps to hold the pipes securely in position at 5 flexible joints that were damaged by the dredging of the river in 1915.

The cost of repairing a single lead joint leak in the 36-inch southern high-service line in Morton Street near the Forest Avenue Railroad Station, was $1,709.87. This was an unusually troublesome and expensive leak. Early in the year the New York, New Haven & Hartford Railroad officials complained of an accumulation of water on the roadbed where the pipe line crosses under the tracks. A careful search for a leak was made at that time without finding any trouble; later, the Railroad Company laid a drain to carry off the water, and in connection with this work further investigations were made along the pipe line and the leak was located under the sidewalk in Morton Street, 140 feet west of the railroad tracks and at a point where the pipe was buried 15 feet below the surface of the ground, and repairs were completed July 1.

In connection with the rebuilding of the Chestnut Hill Avenue bridge over the Boston & Albany Railroad, the pipe box enclosing the 30-inch southern high-service force main was removed and the pipe line was shut off and drained to facilitate the work of erecting the new steel highway bridge.

The pipe box enclosing and supporting the 30-inch low-service pipe line at the Chelsea North Bridge over the Mystic River was rebuilt for a distance of 251 feet.

The tops of the boxes enclosing the 16-inch northern high-service pipe line in Broadway, at the Pines River crossings in Revere and Saugus, were rebuilt in connection with the rebuilding of the main bridge.

A 48-inch by 22½-inch Venturi meter was installed on the new Weston Aqueduct supply main just west of the connection between this main and the Mystic mains in Somerville. A 20-inch by 5¼-inch Venturi meter was installed on the connection with the Somerville pipes in Fellsway at Middlesex Avenue. A 20-inch by 5¼-inch Venturi meter, formerly used for measuring the supply to Arlington, was removed from Medford Street at Parallel Street and after it was thoroughly overhauled it was installed on the connection with the Somerville pipes at the junction of Mystic Valley and Alewife Brook parkways. The 16-inch by 6.005-inch Venturi meter on Beal Street at Summit Avenue, in Quincy, was replaced with a 16-inch by 8-inch meter.

There are now 76 Venturi meters from 6 to 60 inches in diameter in the distribution pipe lines. Sixty-four of these are on connections supplying various towns in the Metropolitan Water District, 4 on Weston Aqueduct supply mains, 1 each at the Hyde Park, Spot Pond and Arlington pumping stations and on emergency connections to Cambridge, Newton and Wakefield, 1 between the Fisher Hill force main and the Spot Pond mains, and 1 on the Clinton Road line in front of effluent gate-house No. 1 at Chestnut Hill Reservoir. A 12-inch by 6-inch Hersey detector meter was installed on the southern extra high-service connection to Milton on Metropolitan Avenue and put into service on June 25.

The 9 pressure regulating valves in the distribution mains, for reducing the pressure of the water supplied to Nahant, Revere, Swampscott and Winthrop, and to portions of Chelsea, East Boston and Hyde Park have given satisfactory service.

Recording pressure gages have been maintained at 24 stations on the distribution system and tables in the Appendix show the hydraulic grade at 18 of these stations as determined from the charts.

Pipes, specials and other materials and supplies required for maintaining and operating the pipe lines have been kept on hand at the Glenwood pipe yard in Medford and at the Chestnut Hill pipe yard in Brighton, and an auto truck equipped with a gate-operating attachment has been stationed at each yard, with men on duty ready to operate them in case of emergency any time during the day or night. A third auto truck, equipped with gate-operating attachment, has also been maintained for relief service in case either of the other trucks is out of commission for any reason.

Consumption of Water

During the year 47,517,455,000 gallons of water were furnished from the Metropolitan Water Works to the 18 cities and towns supplied. This is equivalent to an average daily consumption of 130,184,800 gallons and for the estimated population of 1,326,080 is at the rate of 98.2 gallons per capita, very nearly the same as in 1925.

The town of Brookline and the city of Newton were supplied from their local sources, with the exception that the city of Newton was supplied with 325,339,000 gallons of water from the Metropolitan supply through the emergency connection on Ward Street. Including this water the average daily consumption in these municipalities was as follows: —

	Estimated Population	Average Gallons	Daily Consumption Gallons per Capita
Brookline	43,740	4,212,500	96
Newton	54,660	4,252,800	78

The total consumption of the town of Brookline was 1,537,554,000 gallons, of which 308,141,000 gallons was supplied from elevation 375 and 1,229,413,000 gallons was supplied from elevation 250.

Under special arrangements the city of Quincy supplied 14,531,000 gallons of water to the United States Government Reservation on Peddock's Island and 556,000 gallons to the town of Braintree, and the town of Arlington supplied 692,000 gallons to the town of Winchester.

The population, consumption of water and per cent of services metered in the Metropolitan Water District as supplied in 1926, and for the period from 1890 to 1926, inclusive, are shown graphically by the accompanying diagram.

The average daily consumption of water in each of the municipalities in the Metropolitan Water District during 1925 and 1926, is as follows:—

	Estimated Population, 1926	Average Daily Consumption				
		1925		1926		Increase in Gallons
		Gallons	Gallons per Capita	Gallons	Gallons per Capita	
Arlington	26,090	1,576,400	62	1,504,400	58	72,000[1]
Belmont	16,080	1,047,600	68	1,056,900	66	9,300
Boston	789,500	89,724,700	115	91,275,700	116	1,551,000
Chelsea	47,950	3,660,400	77	3,474,400	72	186,000[1]
Everett	42,440	5,281,000	125	5,215,900	123	65,100[1]
Lexington	8,040	492,900	63	517,000	64	24,100
Malden	52,340	2,968,400	57	3,139,800	60	171,400
Medford	49,430	2,507,600	52	2,522,400	51	14,800
Melrose	20,610	1,253,800	62	1,379,600	67	125,800
Milton	13,420	604,000	46	701,600	52	97,600
Nahant	1,670	176,000	107	178,200	107	2,200
Quincy	62,510	4,478,200	74	4,757,000	76	278,800
Revere	34,240	2,377,900	71	2,263,800	66	114,100[1]
Somerville	100,460	7,955,500	80	7,791,000	78	164,500[1]
Stoneham	9,310	574,000	63	560,000	60	14,000[1]
Swampscott	9,110	753,900	84	720,800	78	33,100[1]
Watertown	26,330	1,887,500	74	2,059,300	78	171,800
Winthrop	16,550	1,030,000	64	1,067,000	64	37,000
Dist. Supplied	1,326,080	128,349,800	98	130,184,800	98	1,835,000
Brookline	43,740	4,068,700	95	4,212,500	96	143,800
Newton	54,660	4,181,800	78	4,252,800	78	71,000
Total District	1,424,480	136,600,300	97	138,650,100	97	2,049,800

[1]Decrease.

The consumption by districts in 1926 as compared with 1925 is as follows: —

	Gallons per Day 1926	Increase from 1925	
		Gallons per Day	Percentage
Low-service district, embracing the low-service districts of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford and Somerville	71,975,200	1,264,100	1.79
Southern high-service district, embracing Quincy and Watertown, the high-service district of Boston except Breed's Island, and portions of Belmont and Milton	44,688,900	406,500	0.92
Northern high-service district, embracing Melrose, Nahant, Revere, Stoneham, Swampscott, Winthrop and Breed's Island and the high-service districts of Chelsea, Everett, Malden, Medford and Somerville	11,061,200	11,300[1]	0.10[1]
Southern extra high-service district, embracing the higher portions of Hyde Park, Milton and West Roxbury	1,205,100	194,300	19.22
Northern extra high-service district, embracing Lexington, and the higher portions of Arlington and Belmont	1,254,400	18,600[1]	1.46[1]
District supplied	130,184,800	1,835,000	1.43
Supplied from local sources, Brookline and Newton	8,465,300	214,800	2.60
Total district	138,650,100	2,049,800	1.50

[1]Decrease.

Through the emergency connection on Ward Street near Hammond Street, water was furnished to the city of Newton every month in the year, the total quantity supplied being 325,339,000 gallons or 311,839,000 gallons in excess of the quantity the city is entitled to take free of charge under the agreement made in 1900, when the Waban Hill Reservoir was purchased from the city, and for this water the city will pay the sum of $21,214.41

Water from Metropolitan Water Works Sources used Outside of the Metropolitan Water District

Places Supplied	Total Quantity (Gallons)	Average Quantity (Gallons per Day)	Amount Charged
Town of Rutland	77,000,000[a]	211,000	—
Town of Holden	27,000,000[b]	74,000	—
City of Worcester	258,600,000	708,500	$10,344.00
Town of Clinton	114,400,000	313,400	—
Westborough State Hospital	81,892,000	224,400	2,456.76
Town of Westborough	22,906,427	62,800	—
Town of Hopkinton	666,000[b]	1,800	—
Town of Ashland	73,000,000[b]	200,000	—
Town of Framingham	504,527,287	1,382,300	20,181.09
Town of Natick	243,750,000	667,800	—
United States Army Reservation at Peddock's Island in Hull	14,531,000[c]	31,600	949.17
Portion of Town of Braintree	556,000[d]	1,500	—
Portion of Town of Winchester	692,000[e]	1,900	—

Note: — Water is used throughout the year in all places except City of Worcester, which took water from the Metropolitan sources on only 55 days, Town of Clinton on 194 days, and Town of Hopkinton on 27 days. Average daily use is in all cases figured on basis of 365 days.

[a]33,500,000 gallons not diverted.

[b]Not diverted from watersheds.

[c]The city of Quincy supplies the water at regular rates and turns over one-half of the receipts to the Commonwealth.

[d]The city of Quincy supplies the water at regular rates and pays the Commonwealth by an addition to its regular apportionment.

[e]The town of Arlington supplies the water at regular rates and pays the Commonwealth by an addition to its regular apportionment.

Information regarding the installation of meters on service pipes by the municipalities supplied with water from the Metropolitan Water Works and statistics relating to the operation of the Metropolitan Water Works for the year 1926 are given in tables in the Appendix.

Respectfully submitted,

WILLIAM E. FOSS, *Director and Chief Engineer.*

BOSTON, January 2, 1927.

REPORT OF DIRECTOR AND CHIEF ENGINEER OF SEWERAGE DIVISION

DAVIS B. KENISTON, *Commissioner, Metropolitan District Commission.*

DEAR SIR: — The following report of the operations of the Metropolitan Sewerage Works for the year ending December 31, 1926, is respectfully submitted: —

ORGANIZATION

The Director and Chief Engineer has charge of the design and construction of all new works, and of the maintenance and operation of all the works controlled by the Metropolitan District Commission for removing sewage from the twenty-seven municipalities which comprise the Metropolitan Sewerage Districts.

The following assistants have been employed during the year: —

Henry T. Stiff, Senior Assistant Engineer, in charge of office and drafting room and of the construction work.

Charles F. Fitz, Assistant Engineer, in charge of maintenance studies and of maintenance construction work on the North Metropolitan System.

Ralph W. Loud, Assistant Engineer, in charge of survey work and field work in connection with the Mill Brook Valley Sewer construction and Belmont Relief Sewer construction.

Thomas L. Whelan, Superintendent, North Metropolitan Sewerage District, was retired June 30, 1926.

Arthur F. F. Haskell, Superintendent, South Metropolitan Sewerage District, was transferred to the North Metropolitan Sewerage District, July 1, 1926.

Frank B. Williams was appointed Superintendent of the South Metropolitan Sewerage District, July 1, 1926.

In addition to the above, the maximum number of engineering and other assistants employed during the year was 15, which includes 3 instrumentmen, 2 inspectors, 1 draftsman, 7 rodmen and engineering assistants and 2 stenographers.

METROPOLITAN SEWERAGE DISTRICTS

AREAS AND POPULATIONS

During the year the Sewerage System of Needham has been connected with the Metropolitan Sewers and that town is now a part of the South Metropolitan Sewerage District. This makes twenty-seven municipalities now within the Metropolitan Sewerage Districts.

The populations of the districts, as given in the following table, are based on the census of 1925.

Table showing Ultimate Contributing Areas and Present Estimated Populations within the Metropolitan Sewerage Districts, as of December 31, 1926

	City or Town	Area (Square Miles)		Estimated Population	
North Metropolitan District	Arlington	5.20		26,520	
	Belmont	4.66		16,380	
	Boston (portions of)	3.45		105,110	
	Cambridge	6.11		123,100	
	Chelsea	2.24		48,210	
	Everett	3.34		42,570	
	Lexington[1]	5.11		5,250	
	Malden	5.07		52,550	
	Medford	8.35		50,130	
	Melrose	3.73		20,780	
	Reading	9.82		9,050	
	Revere	5.86		34,620	
	Somerville	3.96		101,020	
	Stoneham	5.50		9,400	
	Wakefield	7.65		16,040	
	Winchester	5.95		11,880	
	Winthrop	1.61		16,730	
	Woburn	12.71		18,770	
			100.32		708,110
South Metropolitan District	Boston (portions of)	24.96		314,990	
	Brookline	6.81		44,140	
	Dedham[1]	9.40		13,800	
	Milton	12.59		13,620	
	Newton	16.88		55,330	
	Quincy	12.56		63,450	
	Waltham	13.63		35,550	
	Watertown	4.04		26,670	
	Wellesley	9.89		9,430	
	Needham	12.50		9,350	
			123.26		586,330
	Totals		223.58		1,294,440

[1]Part of Town

METROPOLITAN SEWERS

Sewers Purchased and Constructed and Their Connections

During the year there have been 1.615 miles of Metropolitan sewers built within the sewerage districts, so that there are now 122.970 miles of Metropolitan sewers. Of this total, 9.642 miles of sewers, with the Quincy Pumping Station, have been purchased from cities and towns of the districts. The remaining 113.328 miles of sewers and other works have been constructed by the Metropolitan Boards.

The locations, lengths and sizes of these sewers are given in the following tables, together with other data referring to the public and special connections with the systems: —

North Metropolitan Sewerage System

Location, Length and Sizes of Sewers, with Public and Special Connections

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1926	Special Connections: Character or Location of Connection	Special Connections: Number in Operation
Boston: —					
Deer Island	4′ 0″ to 9′ 0″	1.653	4	—	—
East Boston	9′ 0″ to 1′ 0″	5.467	25	Shoe factory	1
				Middlebrook Wool-combing Co.	1
Charlestown	6′ 7″ x 7′ 5″ to 1′ 0″	3.292	15	Navy Yard	9
				Private Building	1
Winthrop	9′ 0″	2.864	14	Club House	1
				Fire department station	1
				Private building	1
				Bakery	1
				Rendering Works	1
Chelsea	8′ 4″ x 9′ 2″ to 15″	5.230	14	Metropolitan Water Works blow-off	1
				Chelsea Water Works blow-offs	2
				Naval Hospital	1
				U. S. Lighthouse Service	1
				Metropolitan Water Works blow-off	1
Everett	8′2″x8′10″ to 4′8″x5′1″	2.925	9	Cameron Appliance Co.	1
				Shultz-Goodwin Co.	1
				Andrews-Wasgatt Co.	1
				National Metallic Bed Co.	1
				Linoide Co.	1
				Factory	2
				New England Structural Co.	1
Lexington[5]	—	—	—	—	—
Malden	4′ 6″ x 4′ 10″ to 1′ 0″	5.844[1]	35	Metropolitan Water Works blow-off	1
				Private buildings	226[2]
				Private buildings	130[4]
Melrose	4′ 6″ x 4′ 10″ to 10″	6.099[3]	40	Factory	1
				Railroad station	1
				Park Department bath-house	1
				Harvard dormitories	2
				Slaughterhouse	1
				City Hospital	3
Cambridge	5′ 2″ x 5′ 9″ to 1′ 3″	7.209	49	Street Railway machine shop	1
				Private building	1
				Factory building	1

[1] Includes 1.84 miles of sewer purchased from the city of Malden.

[2] Mostly buildings connected with sewers formerly belonging to city of Malden but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 215 of the Acts of 1898 and by the Metropolitan Water and Sewerage Board in accordance with Chapter 512 of the Acts of 1911 and made parts of the North Metropolitan Sewerage System.

[3] Includes .736 of a mile of sewer purchased from the city of Melrose.

[4] Mostly buildings connected with a sewer formerly belonging to the city of Melrose but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 414 of the Acts of 1896 and with a sewer extension built in accordance with Chapter 436 of the Acts of 1897 by the Metropolitan Sewerage Commission as an outlet for part of the town of Stoneham and made parts of the North Metropolitan Sewerage System.

The Metropolitan Sewer extends but a few feet into the town of Lexington.

North Metropolitan Sewerage System — *Concluded*

Location, Length and Sizes of Sewers, with Public and Special Connections

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1926	Special Connections: Character or Location of Connection	Special Connections: Number in Operation
Somerville	6′ 5″ x 7′ 2″ to 10″	3.577	15	Tannery	1
				Slaughterhouses (3)	1
				Carhouse	1
				Somerville Water Works blow-off	1
				Street railway power house	1
				Stable	1
				Rendering works	1
				Railroad scale pit	1
				Private building	1
				Armory building	1
Medford	4′ 8″ x 5′ 1″ to 10″	6.326	26	Private buildings	9
				Stable	1
				Police substation	1
				Tanneries	6
				Private buildings	10
				Gelatine factory	1
				Watch-hand factory	1
				Stable	1
Winchester	4′ 6″ to 1′ 3″	10.420	31	Railroad station	2
				Felt works	1
				Town Hall	1
				Bay State Saw & Tool Co.	1
				Whitney Machine Co.	1
				Metropolitan Sewerage Division	1
Stoneham	1′ 8″ to 10″	2.333	6	—	—
Woburn	2′ 6″ x 2′ 7″ to 1′ 3″	1.186	3	Glue factory	4
				Private buildings	1
Arlington	3′ 0″ x 3′ 6″ to 10″	5.794[1]	58	Private buildings	196[2]
				Railroad station	1
				Car house	3
				Post office	1
Belmont[3]	—	—	4	—	—
Wakefield	3′ 0″ to 2′ 0″ x 2′ 3″	0.703	1	—	—
Revere	4′ 0″ to 15″	0.136	3	—	—
Reading	—	0.055	1	—	—
		71.113[4]	354		653

[1] Includes 2.631 miles of sewer purchased from the town of Arlington.
[2] Mostly buildings connected with a sewer formerly belonging to the town of Arlington but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 520 of the Acts of 1897 and made a part of the North Metropolitan Sewerage System.
[3] The Metropolitan Sewer extends but a few feet into the town of Belmont.
[4] Includes 2.787 miles of Mystic Valley Sewer in Medford and Winchester, running parallel with the Metropolitan Sewer.

South Metropolitan Sewerage System

Location, Length and Sizes of Sewers, with Public and Special Connections

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1926	Special Connections: Character or Location of Connection	Special Connections: Number in Operation
Boston: — Back Bay	6′ 6″ to 3′ 9″	1.500[1]	16	Tufts Medical School	1
				Private house	1
				Administration Building, Boston Park Department	1
				Simmons College Buildings	1
				Art Museum	2
				Prince District Elementary School	1
Brighton	5′ 9″ x 6′ 0″ to 12″	6.010[2]	15	Private buildings	1
				Abattoir	3

[1] Includes .355 of a mile of sewer purchased from the city of Boston.
[2] Includes .446 of a mile of pipe and concrete sewers built for the use of the city of Boston; also .026 of a mile of sewer purchased from the town of Watertown.

South Metropolitan Sewerage System — *Concluded*

Location, Length and Sizes of Sewers, with Public and Special Connections

City or Town	Size of Sewers	Length in Miles	Public Connections, December 31, 1926	Special Connections: Character or Location of Connection	Special Connections: Number in Operation
Dorchester	3′ x 4′ to 2′ 6″ x 2′ 7″	2.870[1]	14	Chocolate works	2
				Machine shop	1
				Paper Mill	1
				Private buildings	3
				Edison Electric Company Station	1
Hyde Park	10′7″x11′7″ to 4′0″x4′1″	4.527	19	Mattapan Paper Mills	2
				Private buildings	2
				Fairview Cemetery buildings	1
Roxbury	6′ 6″ x 7′ to 4′ 0″	1.430	—	—	—
West Roxbury	9′ 3″ x 10′ 2″ to 12″	7.643	17	Caledonia Grove buildings	1
				Parental School	1
				Lutheran Evangelical Church	1
				Private buildings	6
Brookline	6′ 6″ x 7′ 0″ to 8″	2.540[2]	14	Private buildings	2
Dedham	4′ x 4′ 1″ to 2′ 9″ x 3′	5.012	8	Private buildings	2
				Dedham Carpet Mills	1
Hull[3]	60″ pipe	0.750	—	—	—
Milton	11′ x 12′ to 8″	3.600	26	Private buildings	3
Newton	4′ 2″ x 4′ 9″ to 1′ 3″	2.911	10	Private houses	13
Quincy	11′3″ x 12′6″ to 24″ pipe	7.392	19	Metropolitan Water Works blow-off	1
				Squantum schoolhouse	1
Waltham	3′ 6″ x 4′ 0″	0.001	1	—	—
Watertown	4′ 2″ x 4′ 9″ to 12″	0.750[4]	7	Factories	2
				Stanley Motor Carriage Co.	1
				Knights of Pythias building	1
Needham	2′0″ x 2′3″ to 2′3″ x 2′6″	4.921	1	Walker-Gordon Co.	1
				Private buildings	1
Wellesley[5]	—	—	1	—	—
		51.857	168		62

[1] Includes 1.24 miles of sewer purchased from the city of Boston.
[2] Includes .158 of a mile of pipe sewer built for the use of the town of Brookline.
[3] Hull is not a part of the Metropolitan Sewerage District.
[4] Includes .025 of a mile of sewer purchased from the town of Watertown.
[5] The Metropolitan Sewer extends but a few feet into the town of Wellesley.

Area (Square Miles)	Estimated Total Population	Miles of Local Sewer Connected	Estimated Population Contributing Sewage	Ratio of Contributing Population to Total Population (Per cent)	Connections made with Metropolitan Sewers: Public	Connections made with Metropolitan Sewers: Special
North Metropolitan Sewerage District						
100.32	708,110	876.97	655,520	92.6	354	653
South Metropolitan Sewerage District						
123.26	586,330	792.98	463,170	79.0	168	62
Both Metropolitan Sewerage Districts						
223.58	1,294,440	1,669.95	1,118,690	86.4	522	715

Of the estimated gross population of 1,294,440 on December 31, 1926, 1,118,690, representing 86.4 per cent, were on that date contributing sewage to the Metropolitan sewers, through a total length of 1,669.95 miles of local sewers owned by the individual cities and towns of the districts.

These sewers are connected with the Metropolitan Systems by 522 public and 715 special connections. During the current year there has been an increase of

47.77 miles of local sewers connected with the Metropolitan Systems, and 15 public and 24 special connections have been added.

CONSTRUCTION

NORTH METROPOLITAN SEWERAGE SYSTEM

Mill Brook Valley Sewer–Arlington

Chapter 65, Resolves of 1923, authorized a survey and study for a sewer in Mill Brook Valley, Arlington, in accordance with the requirements of Chapter 520, Acts of 1897. Chapter 116, Acts of 1924, authorized the construction of this work. This sewer will extend from West Medford at Warren Street through public streets and private lands to Forest Street in Arlington. It will be divided into four sections, 80, 79, 78 and 77. The lower section, numbered 77, was completed during 1925.

Mill Brook Valley Sewer – Section 78

The particulars of this section and the contract for its completion were described in last year's report. This section was completed April 30, 1926.

Mill Brook Valley Sewer – Section 79

The particulars of this section and the contract for its construction were described in last year's report. Work on this section was completed August 11, 1926. No especial difficulties were encountered in the construction work. The flow in the Metropolitan Sewer at Chestnut Street, Arlington, was diverted through the branch relief sewer to this section April 28, 1926, and is now carried by means of Sections 79, 78 and 77 to the Metropolitan Sewer at Warren Street, West Medford. This appreciably decreases the pumping at the Alewife Brook Sewerage Pumping Station to which this sewage was formerly conducted.

Mill Brook Valley Sewer – Section 80

The work known as Section 80 of the North Metropolitan Sewerage System is located in Arlington, Massachusetts, and consists of a 24-inch and 20-inch Akron pipe and 24-inch cast-iron pipe main-line sewer and a 12-inch Akron pipe branch-line relief sewer. The main-line sewer extends from a point in Grove Street near Dudley Street westerly through land of Gerardo Riccardi, crossing Mill Brook through land of Arlington Gas Light Company, thence through land of Lucia Diloffa, other land of Arlington Gas Light Company and land of the heirs of Michael H. Kelly, crossing Brattle Street, thence through land of R. L. Page, crossing Mill Brook and thence through lands of J. J. Bowler, J. J. Donahoe, Commonwealth of Massachusetts, Town of Arlington, crossing Hobbs Court and thence through lands of Thomas Quinn, The Theodore Schwamb Company, Inc., crossing a right of way and thence through lands of M. E. Young and J. Bitzer to a point in Forest Street, a total distance of about 3,665 linear feet. The branch relief sewer extends from the existing Metropolitan sewer in Massachusetts Avenue northerly through Hobbs Court and under Mill Brook to the above mentioned main-line sewer, a total distance of about 380 feet.

The work included under this section has been placed under contract, some particulars of which are as follows:

Date of contract No. 23 (Sewerage Division) August 23, 1926.
Name of Contractor, Antony Cefalo.
Length of main-line sewer, 3,665 feet.
Length of branch relief sewer, 380 feet.
Diameter of pipe sewers, 20-inch, 24-inch and 12-inch.
Diameter of cast-iron pipes, 24 inches.
Average depth of excavation, main-line, 7½ feet.
Average depth of excavation, branch-line, 8 feet.
Assistant Engineer in charge of construction, Ralph W. Loud.

Work was started on this section August 30, 1926, and at this date 3,380 feet of main-line sewer and 374 feet of the branch relief sewer have been laid.

Belmont Relief Sewer

Chapter 213, Acts of 1926, authorized the construction of an additional Metropolitan sewer for the relief of that part of Belmont which is tributary to the Alewife Brook Metropolitan sewer. This work will consist of one section only, Section 81.

Belmont Relief Sewer – Section 81

The work known as Section 81 of the North Metropolitan Sewerage System is located in Cambridge and Belmont and consists of a 30-inch diameter concrete sewer which extends from a point in the land of the Boston & Maine Railroad at Station 79+70 of Section 43 of the North Metropolitan Sewerage System, through the lands of said Railroad running parallel to the Belmont Branch of Section 43 of the North Metropolitan Sewerage System to a point in Belmont near Hills Crossing Station of said Railroad.

The work included in this section has been placed under contract, some particulars of which are as follows:

Date of Contract No. 24 (Sewerage Division) December 30, 1926.
Name of contractor, J. H. Ferguson Company.
Length of section, 3,585 feet.
Diameter of concrete sewer, 30 inches.
Average depth of excavation, 7½ feet.
Approximate length of sewer on pile foundation, 900 feet.
Work on this section has not yet started.

Malden, Revere and Everett Drainage System

Chapter 456 of the Acts of 1924 directed the Metropolitan District Commission to construct a drainage channel to improve a low area lying in the cities of Malden, Revere and Everett. Surveys and land takings were completed and work was started on construction plans and field work on July 12, 1926. A temporary injunction by the Supreme Court was placed on the further carrying on of this work which ceased for the present on July 28, 1926, pending the decision of the Court on the questions before it.

MAINTENANCE

Scope of Work and Force Employed

The maintenance of the Metropolitan Sewerage System includes the operating of 8 pumping stations, the Nut Island screen-house and 122.970 miles of Metropolitan sewers, receiving the discharge from 1,669.95 miles of town and city sewers at 522 points, together with the care and study of inverted siphons under streams and in the harbor.

At present the permanent maintenance force consists of 174 men, of whom 108 are employed on the North System and 66 on the South System. These are subdivided as follows: North Metropolitan System, 67 engineers and other employees in the pumping stations and 41 men, including foremen, on maintenance, care of sewer lines, buildings and grounds; South Metropolitan System, 41 engineers and other employees in the pumping stations and 25 men, including foremen on maintenance, care of sewer lines, buildings and grounds.

The regular work of this department, in addition to the operation of the pumping stations, has consisted of routine work of cleaning and inspecting sewers and siphons, caring for tide gates, outfall sewers, regulators and overflows, measuring flow in sewers, inspection of connections to the Metropolitan sewers, and the care of pumping stations and other buildings, grounds and wharves.

In addition to these regular duties, other work has been done by the maintenance employees in this department as follows: —

East Boston Pumping Station

A new impeller wheel together with a new shaft, sleeve and outbearing were installed at pump No. 2 at this station.

The piston, piston rod and crosshead slides of engine No. 3, low pressure cylinder, were replaced by new ones.

A concrete block locker building was constructed at the Chelsea side of the siphon leading under Chelsea Creek.

Belle Isle Inlet

Extensive repairs were made to tide gate, overflow and sand catcher at Belle Isle Inlet.

Ward Street Pumping Station

The tubes in vertical boiler No. 1 at this station had begun to fail at the water line. An examination showed that all of them were reduced in thickness by corrosion. To avoid risk of loss of service of the boiler which might occur at any time and must occur at intervals, all the tubes were replaced by new ones.

Quincy Pumping Station

Repairs to roof at this station consisting of new copper gutters, down spouts, ridge rolls, ventilators and valleys were completed.

Nut Island Screen-house

In addition to the regular maintenance work at the Nut Island Screen-house and at the Hough's Neck Pumping Station, the employees of this station have made 4,019 lbs. of brass castings for the different pumping stations of the Sewerage Systems. A large amount of expert machine work has been done here for other stations.

Gasolene in Public Sewers

During the year the usual precautions have been maintained against the introduction of gasolene into the Metropolitan sewers. An inspector has been employed who covers both North and South Metropolitan Sewerage Districts. His duties are to see that all newly constructed garages or other gasolene using establishments are supplied with a proper gasolene separator and also to see that these separators are kept in working condition.

During the year 1926 the number of permits issued by the municipalities in the Sewerage Districts for the construction of garages and other places where gasolene is used was 1,322. Each of these permits necessitates an examination by our inspector. Many of them are attended to through the mails and do not require a personal visit. Visits are made, however, to all locations where a connection is to be made with the public sewerage system and to such places as do not respond to the return postal cards sent out. During the year 70 such places were connected with the sewers that empty into the Metropolitan Systems. At the present time, there are, according to our records, 1,428 garages and other establishments where gasolene is used connected with the local sewerage systems which discharge into the Metropolitan sewers.

This system of inspection has given satisfactory results. Occasionally odors of gasolene are detected in the sewers but the amount is small and the situation appears to be well in hand.

North Metropolitan Sewerage System

Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and present population on such areas; ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

[Populations estimated as of December 31, 1926]

Cities and Towns	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection[1]	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage	Area Ultimately to Contribute Sewage	Ratio of Contributing Population to Present Total Population	Ratio of Contributing Area to Ultimate Area
							Sq. Miles	Sq. Miles	Per Cent.	Per Cent.
Boston (Deer Island)	0.70	Separate	—	—	800[2]	800	—	—	—	—
Winthrop	33.10	Separate	3,525	4.7	16,570	16,730	1.40	1.61	99.0	87.0
Boston (East Boston)	34.58	Separate and combined	5,345	11.9	63,610	66,060	1.20	2.18	96.3	55.0
Chelsea	32.30	Separate and combined	4,628	10.2	47,210	48,210	1.19	2.24	97.9	53.1
Everett	51.45	Separate and combined	5,956	6.9	41,100	42,570	2.11	3.34	96.5	63.2
Malden	72.37	Separate	8,484	5.85	49,630	52,550	3.28	5.07	94.4	64.7
Melrose	44.72	Separate	4,194	4.55	19,080	20,780	2.08	3.73	91.8	55.8
Boston (Charlestown)	21.79	Separate and combined	5,544	6.8	37,700	38,250	0.67	1.27	98.6	52.8
Cambridge	162.24	Separate and combined	18,207	6.7	121,990	123,100	5.09	6.11	99.1	83.3
Somerville	105.25	Separate and combined	17,408	5.75	100,100	101,020	3.61	3.96	99.1	91.2
Medford	76.34	Separate	8,360	5.9	49,300	50,130	3.61	8.35	98.4	43.2
Winchester	38.11	Separate	2,393	4.95	11,740	11,880	1.80	5.95	98.8	30.3
Woburn	19.88	Separate	1,572	5.5	8,650	18,770	1.10	12.71	46.1	8.7
Stoneham	14.18	Separate	1,190	5.0	5,950	9,400	0.77	5.50	63.3	14.0
Arlington	44.55	Separate	4,319	5.4	23,320	76,520	2.31	5.20	87.9	44.4
Belmont	34.48	Separate	2,344	6.3	15,260[3]	16,380	1.68	4.66	93.2	36.1
Wakefield	20.45	Separate	1,231	5.2	6,400	16,040	0.85	7.65	39.9	11.1
Lexington	10.70	Separate	351	4.3	1,510	5,250	0.43	5.11	28.8	8.4
Revere	50.18	Separate	4,728	7.0	33,100	34,620	2.41	5.86	95.6	41.1
Reading	9.60	Separate	595	4.2	2,500	9,050	0.45	9.82	27.6	4.6
Totals	876.97	—	100,374	6.5	655,520	708,110	36.04	100.32	92.6	35.9

[1] Estimated from Assessors' statement of the number of houses in each city or town on April 1, 1926, and the population from census of 1925.
[2] Estimated by Superintendent of the institution on Deer Island.
[3] Including 2 connections with McLean Hospital, having an estimated population of 592.

South Metropolitan Sewerage System

Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

[Populations estimated as of December 31, 1926]

Cities and Towns	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection[1]	Estimated Population Now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage	Area Ultimately to Contribute Sewage	Ratio of Contributing Population to Present Total Population	Ratio of Contributing Area to Ultimate Area
							Sq. Miles	Sq. Miles	Per Cent.	Per Cent.
Boston (Back Bay)	27.61	Separate and combined	2,139	19.5	41,710	41,850	1.16	1.61	99.7	72.0
Boston (Brighton)	69.50	Separate and combined	5,245	10.0	52,450	52,700	3.32	3.74	99.5	88.8
Brookline	78.90	Separate and combined	6,197	7.05	43,690	44,140	3.73	6.81	99.0	54.8
Newton	154.56	Separate	10,397	5.2	54,060	55,330	8.61	16.88	97.7	51.0
Watertown	55.06	Separate	4,461	5.9	26,320	26,670	2.53	4.04	98.7	62.6
Waltham	50.47	Separate	4,580	7.6	34,810	35,550	2.59	13.63	97.9	19.0
Boston (Dorchester)	65.29	Separate and combined	7,207	9.7	69,910[2]	97,500[2]	2.79	4.89	71.7	57.1
Milton	22.57	Separate and combined	1,704	4.4	7,500[2]	13,620[2]	1.14	12.59	55.1	9.1
Boston (Hyde Park)	38.79	Separate	2,930	6.95	20,360	20,440	1.78	4.57	99.6	38.9
Dedham	19.25	Separate	1,162	5.4	6,270	13,800[3]	0.95	9.40	45.4	10.1
Boston (Roxbury)[4]	—	—	—	—	—	48,700[2]	—	1.23	—	—
Boston (West Roxbury)	72.24	Separate and combined	5,748	6.5	39,910[2,5]	53,800[2]	3.10	8.92	74.2	34.8
Quincy	108.00	Separate	10,178	6.1	62,090	63,450	4.27	12.56	97.9	34.0
Wellesley	25.51	Separate	887	4.3	3,810	9,430	1.46	9.89	40.4	14.8
Needham	5.23	Separate	66	4.3	280	9,350	0.25	12.50	3.0	2.0
Totals	792.98	—	62,901	7.4	463,170	586,330	37.68	123.26	79.0	30.6

[1] Estimated from Assessors' statement of the number of houses in each city or town on April 1, 1926, and the population from census of 1925.
[2] Parts of Dorchester, Milton, Roxbury and West Roxbury which are situated within the South Metropolitan Sewerage System limits are tributary at present to Boston main drainage works.
[3] Part of town not included in Metropolitan Sewerage District.
[4] At present connected with Boston main drainage system.
[5] Including connection with institutions at Austin Farm, having an estimated population of 2,549.

Both Metropolitan Sewerage Systems

Table showing Areas delivering Sewage to both Systems; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas. Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

[Population estimated as of December 31, 1926]

Systems	Miles of Local Sewers Connected	Separate or Combined	Number of Connections with Local Sewers	Estimated Number of Persons Served by Each House Connection	Estimated Population now Contributing Sewage	Estimated Present Total Population	Estimated Area Now Contributing Sewage	Area Ultimately to Contribute Sewage	Ratio of Contributing Population to Present Total Population	Ratio of Contributing Area to Ultimate Area
							Sq. Miles	Sq. Miles	Per Cent.	Per Cent.
North Metropolitan . .	876.97	Separate and combined .	100,374	6.5	655,520	708,110	36.04	100.32	92.6	35.9
South Metropolitan . .	792.98	Separate and combined .	62,901	7.4	463,170	586,330	37.68	123.26	79.0	30.6
Totals	1,669.95	— —	163,275	6.9	1,118,690	1,294,440	73.72	223.58	86.4	32.8

PUMPING STATIONS

Capacities and Results

North Metropolitan System

Deer Island Pumping Station

At this station are four submerged centrifugal pumps with impeller wheels 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 100,000,000 gallons, with 19-foot lift.
Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.
Average coal duty for the year: 53,800,000 foot pounds.
Average quantity raised each day: 79,300,000 gallons.
Maximum quantity raised per day: 143,800,000 gallons.

East Boston Pumping Station

At this station are four submerged centrifugal pumps, with impeller wheels 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 100,000,000 gallons with 19-foot lift.
Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.
Average coal duty for the year: 73,000,000 foot pounds.
Average quantity raised each day: 77,300,000 gallons.
Maximum quantity raised per day: 141,800,000 gallons.

Charlestown Pumping Station

At this station are three submerged centrifugal pumps, two of them having impeller wheels 7.5 feet in diameter, the other 8.25 feet in diameter. They are driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 60,000,000 gallons with 8-foot lift.
Contract capacity of 2 pumps: 22,000,000 gallons each, with 11-foot lift.
Average coal duty for the year: 49,800,000 foot pounds.
Average quantity raised each day: 43,500,000 gallons.
Maximum quantity raised per day: 69,300,000 gallons.

Alewife Brook Pumping Station

The plant at this station consists of two 9-inch Andrews commercial centrifugal pumps, direct connected by horizontal shafts to compound marine engines, together with a pump and engine added later. The latter consists of a specially designed engine of the vertical cross-compound type, having between the cylinders a centrifugal pump rotating on a horizontal axis.

Contract capacity of the 2 original pumps: 4,500,000 gallons each, with 13-foot lift.
Contract capacity of new pump: 13,000,000 gallons, with 13-foot lift.
Average coal duty for the year: 20,500,000 foot pounds.
Average quantity raised each day: 5,800,000 gallons.
Maximum quantity raised per day: 10,600,000 gallons.

Reading Pumping Station

At this station are two submerged centrifugal pumps, one of 2,500,000 gallons per 24 hours, and one of 4,000,000 gallons per 24 hours, capacity. These operate against a maximum head of 65 feet, and are actuated by vertical shafts directly connected with 75 and 100 horsepower motors. Alternating current of 440 volts furnished by the municipal plant of the town of Reading is used.

Average quantity pumped per 24 hours: 833,000 gallons.
Maximum quantity raised per day: 1,100,000 gallons.

South Metropolitan System

Ward Street Pumping Station

At this station are two vertical, triple-expansion pumping engines, of the Allis-Chalmers type, operating reciprocating pumps, the plungers of which are 48 inches in diameter with a 60-inch stroke and one 50,000,000-gallon centrifugal pumping unit actuated by a 500 H.P. Uniflow engine.

Contract capacity of 3 pumps: 50,000,000 gallons each, with 45-foot lift.
Average coal duty for the year: 69,800,000 foot pounds.
Average quantity raised each day: 36,200,000 gallons.
Maximum quantity raised per day: 58,200,000 gallons.

Quincy Pumping Station

The plant at this station consists of one compound condensing Deane duplex piston pumping unit and one Lawrence centrifugal pump driven by a Sturtevant compound condensing engine and one Morris centrifugal pump driven by a Morris compound condensing engine.

Contract capacity of 3 pumps: Morris centrifugal, 10,000,000 gallons; Deane, 5,000,000 gallons; Lawrence centrifugal, 10,000,000 gallons.
Average coal duty for the year: 31,400,000 foot pounds.
Average quantity raised each day: 6,238,000 gallons.
Maximum quantity raised per day: 16,460,000 gallons.

Nut Island Screen-house

The plant at this house includes two sets of screens in duplicate actuated by small reversing engines of the Fitchburg type. Two vertical Deane boilers, 80 horsepower each, operate the engines, provide heat and light for the house, burn materials intercepted at the screens, and furnish power for the Hough's Neck pumping station.

Average daily quantity of sewage passing screens: 62,200,000 gallons.
Maximum quantity passing screens per day: 170,000,000 gallons.

Hough's Neck Pumping Station

At this station are two 6-inch submerged Lawrence centrifugal pumps with vertical shafts actuated by two Sturtevant direct-current motors.

The labor and electric energy for this station are supplied from the Nut Island Screen-house, and as used at present it does not materially increase the amount of coal used at the latter station.

Average quantity raised each day: 245,000 gallons.
Maximum quantity raised per day: 504,100 gallons.

Average Daily Volume of Sewage lifted at Each of the Eight Metropolitan Sewerage Pumping Stations during the Year, as compared with the Corresponding Volumes for the Previous Year.

Pumping Station	Average Daily Pumpage			
	Jan. 1, 1926, to Dec. 31, 1926	Jan. 1, 1925, to Dec. 31, 1925	Increase during the Year	
	Gallons	Gallons	Gallons	Per Cent
Deer Island	79,300,000	78,100,000	1,200,000	1.5
East Boston	77,300,000	76,100,000	1,200,000	1.6
Charlestown	43,500,000	45,000,000	1,500,000[1]	3.3[1]
Alewife Brook	5,800,000	5,900,000	100,000[1]	1.7[1]
Reading	833,000	783,000	50,000	6.4
Quincy	6,238,000	5,002,000	1,236,000	24.7
Ward Street (actual gallons pumped)	36,200,000	35,110,000	1,090,000	3.1
Hough's Neck	245,000	212,000	33,000	15.6

[1] Decrease.

The Metropolitan Sewerage Districts now have outfalls in Boston Harbor at five points, two of which may discharge sewage from the North District and three from the South District.

During the year the sewage of the North District has been discharged wholly through the outlet located near Deer Island light. The other outfall of this system is closed by a cast-iron cover which can easily be removed.

Of the outfalls of the South District two extend for a distance exceeding one mile from the shore of Nut Island, Quincy, and the third one, called an emergency outlet, extends about 1,500 feet from the same. It was not necessary to discharge through this outfall during the year.

During the year the average flow through the North Metropolitan District outfall at Deer Island has been 79,300,000 gallons of sewage per 24 hours, with a maximum rate of 143,800,000 gallons during a stormy period in February, 1926. The amount of sewage discharged into the North Metropolitan District averaged 121 gallons per day for each person, taking the estimated population of the District contributing sewage. If the sewers in this District were restricted to the admission of sewage proper only, this per capita amount would be considerably decreased.

In the South Metropolitan District an average of 62,200,000 gallons of sewage per 24 hours has passed through the screens at the Nut Island screen-house and has been discharged from the outfalls into the outer harbor. The maximum rate of discharge per day which occurred during a stormy period in March, 1926, was 170,000,000 gallons. The discharge of sewage through these outfalls represents the amount of sewage contributed by the South Metropolitan District, which was at the rate of 134 gallons per day per person of the estimated number contributing sewage in the District.

The daily discharge of sewage per capita is considerably larger in the South Metropolitan District than it is in the North Metropolitan District, because owing to the large size and unused capacity of the South District High-level Sewer, much storm water is at present admitted to the sewers of this District which will be reduced later.

Material Intercepted at the Screens

The material removed from the sewage at the screens of the North Metropolitan Sewerage Stations, consisting of rags, paper and other floating materials, has during the year amounted to 1,909 cubic yards. This is equivalent to 1.78 cubic feet for each million gallons of sewage pumped at Deer Island.

The material removed from the sewage at the screens of the South Metropolitan Sewerage Stations amounted to 4,010 cubic yards, equal to 4.77 cubic feet per million gallons of sewage delivered at the outfall works at Nut Island.

Studies of sewage flows in the Metropolitan sewers and siphons indicate that they are free from deposit.

FREDERICK D. SMITH
Director and Chief Engineer of Sewerage Division.

BOSTON, January 1, 1927.

FINANCIAL STATEMENT
OF THE
METROPOLITAN DISTRICT COMMISSION
as of December 1, 1926

PARKS DIVISION

CONSTRUCTION

Metropolitan Parks Construction Fund

Total amount appropriated to Dec. 1, 1925				$9,093,043.96
Receipts added before June 1, 1901				198,942.81
				$9,291,986.77
Expenditures.				
Charles River Reservation:				
Claims		$718.90		
			$718.90	
Amounts charged to Dec. 1, 1925			9,262,759.13	
				9,263,478.03
Balance, Dec. 1, 1926				$28,508.74

Metropolitan Parks Construction Fund, Series II

Total amount appropriated to Dec. 1, 1925				$9,404,000.00
Receipts from sales, etc.				29,934.16
				$9,433,934.16
Chap. 79, Items 649 and 660, Acts of 1926				13,749.63
				$9,447,683.79
Expenditures				
Old Colony Parkway:				
Construction:				
Contracts:				
Bay State Dredging & Cont. Co.	$738,328.25			
Coleman Bros.	81,153.90			
John W. O'Connell	903.30			
		$820,385.45		
Labor and Materials		60,359.54		
			$880,744.99	
Land			13,000.00	
Engineering:				
Services		$10,939.06		
Supplies and expenses		1,608.83		
			12,547.89	
Claims			200.00	
Construction of sidewalks			1,049.10	
Advertising bids			605.92	
Printing contracts			128.62	
				$908,276.52
Quannapowitt Parkway:				
Construction:				
Contract, Greenough Const. Co.	$24,758.30			
Labor and materials	101.42			
		$24,859.72		
Engineering:				
Services	$3,244.74			
Supplies and expenses	115.13			
		3,359.87		
Claims		50.00		
Advertising bids		65.65		
			$28,335.24	
Neponset Bridge:				
Construction:				
Contract, Crandall Eng. Co.	$5,284.99			
Labor and materials	10,912.36			
		$16,197.35		
Engineering:				
Supplies and expenses		25.00		
			16,222.35	
			$952,834.11	
Amounts charged to Dec. 1, 1925			8,421,807.82	
				9,374,641.93
Balance, Dec. 1, 1926				$73,041.86

Charles River Basin Construction Fund

Total amount appropriated to Dec. 1, 1925	$4,500,000.00
Receipts:	
Period prior to December 1, 1925	9,368.91
	$4,509,368.91
Expenditures	
Total amount charged to Dec. 1, 1925	4,472,862.22
Balance, Dec. 1, 1926	$36,506.69

Nantasket Beach Construction Fund

Total amount appropriated to Dec. 1, 1925	$700,000.00
Receipts:	
Period prior to Dec. 1, 1925	5,881.50
	$705,881.50
Expenditures	
Amounts charged to Dec. 1, 1925	705,881.50

North Beacon Street Bridge Construction Fund

Total amount appropriated to Dec. 1, 1925	$175,000.00
Amounts charged to Dec. 1, 1925	174,853.50
Balance, Dec. 1, 1926	$146.50

Massachusetts Avenue Bridge Construction Fund

Total amount appropriated to Dec. 1, 1925		$600,000.00
Expenditures		
Interest	$33,680.83	
Bronze tablet	330.00	
	$34,010.83	
Amounts charged to Dec. 1, 1925	488,285.73	
		522,296.56
Balance, Dec. 1, 1926		$77,703.44

Northern Traffic Route Construction Fund

Total amount appropriated to Dec. 1, 1925				$2,100,000.00
Chap. 79, Item 647, Acts of 1926				300,000.00
				$2,400,000.00
Expenditures				
Construction:				
Contracts:				
Coleman Bros.	$520,817.51			
Bay State Dredging & Cont. Co.	21,602.53			
		$542,420.04		
Labor and Materials		9,219.48		
			$551,639.52	
Land			1,064,064.04	
Engineering:				
Services		$25,205.30		
Supplies and expenses		2,046.17		
			27,251.47	
Legal:				
Services		$9,754.64		
Expenses		830.90		
			10,585.54	
Claims			12,493.69	
Advertising bids			495.82	
Printing contracts, etc.			223.92	
			$1,666,754.00	
Amounts charged to Dec. 1, 1925			118,582.61	
				1,785,336.61
Balance, Dec. 1, 1926				$614,663.39

CHARLES RIVER BRIDGES CONSTRUCTION FUND

Brookline Street, Essex Street, Cottage Farm Bridge Construction Fund

Total amount appropriated to Dec. 1, 1925				$1,100,000.00
Chapter 327, Acts of 1926				200,000.00
				$1,300,000.00
Expenditures				
Construction:				
Contract, J. F. White Cont. Co.		$2,661.45		
Labor and materials		20,558.75		
			$23,220.20	
Engineering:				
Supplies and expenses			5,220.12	
Interest			7,398.59	
Labor			2,268.00	
Lighting			182.64	
Advertising bids			161.35	
Printing contracts			115.63	
			$38,566.53	
Amounts charged to Dec. 1, 1925			125,270.96	
				163,837.49
Balance, Dec. 1, 1926				$1,136,162.51

Western Avenue, Arsenal Street Bridge Construction Fund

Total amount appropriated to Dec. 1, 1925				$175,000.00
Chapter 327, Acts of 1926				25,000.00
				$200,000.00
Expenditures				
Construction:				
Contracts:				
Simpson Bros.	$5,959.66			
V. James Grande	34,133.78			
		$40,093.44		
Labor and materials		1,889.73		
			$41,983.17	
Engineering:				
Supplies and expenses			1,210.75	
Interest			8,004.81	
Paving tracks			2,710.00	
Lighting			158.72	
			$54,067.45	
Amounts charged to Dec. 1, 1925			138,693.49	
				192,760.94
Balance, Dec. 1, 1926				$7,239.06

Western Avenue Bridge Construction Fund

Total amount appropriated to Dec. 1, 1925				$275,000.00
Chapter 327, Acts of 1926				50,000.00
				$325,000.00
Expenditures				
Construction:				
Contract, Simpson Bros.		$5,603.37		
Labor and materials		3,044.10		
			$8,647.47	
Interest			19,607.16	
			$28,254.63	
Amounts charged to Dec. 1, 1925			274,828.30	
				303,082.93
Balance, Dec. 1, 1926				$21,917.07

River Street, Brighton Street Bridge Construction Fund

Total amount appropriated to Dec. 1, 1925				$275,000.00
Chapter 327, Acts of 1926				25,000.00
				$300,000.00
Expenditures				
Construction:				
Contract, Luke S. White, Inc.		$80,269.98		
Engineering:				
Supplies and expenses		2,167.29		
Interest		2,387.52		
Bronze tablet		440.00		
			$85,264.79	
Amounts charged to Dec. 1, 1925			197,148.68	
				282,413.47
Balance, Dec. 1, 1926				$17,586.53

MISCELLANEOUS

Metropolitan Parks Expense Fund

Receipts, Dec. 1, 1925 to Dec. 1, 1926:				
Bath Houses:				
Revere Beach:				
Sale of tickets	$27,749.60			
Miscellaneous	606.93			
		$28,356.53		
Nantasket Beach:				
Sale of tickets	$16,530.80			
Steam furnished	5,634.25			
Miscellaneous	683.18			
		22,848.23		
Nahant Beach:				
Sale of tickets	$9,264.35			
Miscellaneous	81.26			
		9,345.61		
Magazine Beach:				
Sale of tickets	$2,738.80			
Miscellaneous	162.50			
		2,901.30		
Blue Hills:				
Sale of tickets	$365.50			
Miscellaneous	1.50			
		367.00		
			$63,818.67	

Miscellaneous — Continued

Rentals:				
Buildings		$53,085.00		
Land		4,267.00		
Ducts		1,454.08		
Locations		1,246.48		
Houses		1,238.33		
			$61,290.89	
Sales:				
Wood		$3,282.46		
Old lumber, metal, etc.		418.55		
Hay and grass		350.00		
Miscellaneous		313.51		
			4,364.52	
Income from securities			11,355.34	
Court fines			10,711.00	
Privileges			9,137.50	
Reconstruction of Harvard Bridge reimbursement			5,971.87	
Police services			2,824.76	
Sidewalk and entrance construction			2,652.80	
Damages to roadway			2,400.00	
Boat hire			997.20	
Damage to property			892.69	
Miscellaneous			310.96	
			$176,728.20	
Receipts, prior to Dec. 1, 1925			2,813,656.31	
				$2,990,384.51
Expenditures, Dec. 1, 1925, to Dec. 1, 1926:				
General Expense:				
Receipt books, etc.		$95.06		
Interest		13.63		
			$108.69	
Police:				
Physicians' services			56.25	
Engineering:				
Tickets, etc.			98.55	
Blue Hills Reservation:				
Boat		$246.76		
Repairs to houses		145.72		
Bath house expense		42.15		
Court costs		3.90		
			438.53	
Stony Brook Reservation:				
Repairs to houses			5.51	
Blue Hill Parkway:				
Sidewalk and entrance construction:				
Contract, J. A. McCarthy			554.54	
Old Colony Parkway:				
Construction:				
Contract, Crandall Engineering Co.			6,865.15	
Black's Creek Dam:				
Construction:				
Labor and materials			1,000.00	
Middlesex Fells Reservation:				
Repairs to Lawrence Tower		$4,402.78		
Repairs to houses, etc.		204.02		
			4,606.80	
Middlesex Fells Parkway:				
Loam		$1,529.78		
Sidewalk and entrance construction:				
Cost	$664.83			
Refunds	117.50			
		782.43		
Repairs to Wellington Bridge:				
Contract, Simpson Bros. Corporation		6,419.74		
			8,731.95	
Mystic Valley Parkway:				
Sidewalk and entrance construction:				
Cost			1,232.94	
Alewife Brook Parkway:				
Miscellaneous			2.15	
Revere Beach Reservation:				
Bath House:				
Payrolls	$25,806.67			
Bathing suits, etc.	5,196.23			
Heat, light and power	2,658.08			
Hardware, etc.	538.34			
Office supplies	513.50			
Repairs	17,276.14			
Medicines and attendance	102.58			
Miscellaneous supplies	3,096.96			
		$55,188.50		
Legal:				
Services		150.00		
Sidewalk and entrance construction:				
Cost		180.24		
Advertising		41.25		
			$55,559.99	
Revere Beach Parkway:				
Sidewalk and entrance construction:				
Cost			279.85	

Miscellaneous—Continued

Winthrop Parkway:				
Sidewalk and entrance construction:				
Cost				$163.25
Nahant Beach Parkway:				
Bath House:				
Payrolls			$8,513.42	
Heat, light and power			888.01	
Hardware, etc.			141.63	
Office supplies			242.92	
Repairs			9,192.35	
Miscellaneous supplies			420.97	
				19,399.30
Charles River Upper Division:				
Repairs to boat house				487.58
Riverside Recreation Grounds:				
Rental			$30.00	
Water rates			50.00	
				80.00
Charles River Lower Basin:				
Magazine Beach Bath House:				
Payrolls		$2,825.77		
Bathing suits, etc.		7.12		
Hardware, etc.		66.23		
Office supplies		44.36		
Medicines and attendance		9.79		
Miscellaneous supplies		264.15		
			3,217.42	
Construction of landing stage:				
Contract, Bay State Dredging & Contracting Co.			5,823.45	
				9,040.87
Cambridge Parkway:				
Temporary road at Western Avenue:				
Contract, Luke S. White			$5,396.49	
Labor and materials			791.68	
Lighting			215.32	
				6,403.49
Nantasket Beach Reservation:				
Bath House:				
Payrolls		$14,012.28		
Bathing suits, etc.		553.99		
Heat, light and power		1,919.81		
Hardware, etc.		364.11		
Office supplies		118.18		
Repairs		5,927.83		
Medicines and attendance		205.80		
Miscellaneous supplies		2,408.81		
			$25,510.81	
Sea-wall			3,662.36	
Repairs to buildings, etc.			13,137.26	
Advertising			45.00	
				42,355.43
				$157,470.82
Amounts charged to Dec. 1, 1925				2,515,538.24
					$2,673,009.06
Balance, Dec. 1, 1926					$317,375.45

METROPOLITAN PARKS TRUST FUND

Receipts:		
For the year ending Nov. 30, 1926	$106.81	
For the period prior to Dec. 1, 1925	40,776.92	
		$40,883.73
Expenditures:		
For the year ending Nov. 30, 1926	—	
For the period prior to Dec. 1, 1925	$38,106.50	
		38,106.50
Balance, Dec. 1, 1926		$2,777.23

EDWIN U. CURTIS MEMORIAL TRUST FUND

Receipts:		
For the year ending Nov. 30, 1926	$41.23	
For the period prior to Dec. 1, 1925	1,374.40	
		$1,415.63
No expenditures		—
Balance, Dec. 1, 1926		$1,415.63

JOHN W. WEEKS BRIDGE TRUST FUND

Receipts:	
For the year ending Nov. 30, 1926	$234,877.33
Expenditures:	
For the year ending Nov. 30, 1926	153,429.36
Balance, Dec. 1, 1926	$81,447.97

GENERAL REVENUE, BUNKER HILL MONUMENT

Receipts:	
For the year ending Nov. 30, 1926	$4,507.50
For the period prior to Dec. 1, 1925	16,680.90
	$21,188.40

METROPOLITAN PARKS MAINTENANCE FUND, GENERAL

Appropriation Dec. 1, 1925, to Dec. 1, 1926 . . . . . $779,594.63

Expenditures

Administration:			
Police		$225,718.35	
Salaries:			
Commissioners	$2,500.00		
Secretary and clerks	12,516.43		
Chief Engineer & Assistants	16,024.48		
		31,040.91	
Rent, care and lighting of building		2,332.53	
Repairs		81.30	
Stationery, office supplies and expenses		1,990.93	
Printing		682.74	
Engineering supplies and expenses:			
General	$874.87		
Auto expense	187.84		
		1,062.71	
Pensions and annuities		24,862.40	
			$287,771.87
Blue Hills Reservation:			
Labor and teaming:			
General	$49,209.55		
Moth work	26,115.77		
Road repairs	1,417.75		
		$76,743.07	
Supplies and miscellaneous expenses:			
General	$13,209.33		
Moth work	750.98		
Road repairs	1,053.94		
		15,014.25	
			91,757.32
Stony Brook Reservation:			
Labor and teaming:			
General	$3,924.52		
Moth work	4,272.90		
Road repairs	381.68		
		$8,579.10	
Supplies and miscellaneous expenses:			
General	$1,572.65		
Moth work	324.79		
Road repairs	568.77		
		2,466.21	
			11,045.31
Neponset River Reservation:			
Labor and teaming:			
General	$533.12		
Moth work	1,149.03		
		$1,682.15	
Supplies and miscellaneous expenses:			
General	$147.88		
Moth work	115.95		
		263.83	
			1,945.98
Quincy Shore Reservation:			
Labor and teaming:			
General	$8,370.71		
Moth work	286.75		
		$8,657.46	
Street lighting		2,532.09	
Supplies and miscellaneous expenses:			
General	$938.36		
Road repairs	23.00		
		961.36	
			12,150.91
Middlesex Fells Reservation:			
Labor and teaming:			
General	$45,634.05		
Moth work	21,991.58		
Road repairs	9,929.23		
		$77,554.86	
Supplies and miscellaneous expenses:			
General	$16,299.84		
Moth work	453.07		
Road repairs	1,523.47		
		18,276.38	
			95,831.24
Mystic River Reservation:			
Labor and teaming:			
General		$11,811.63	
Supplies and miscellaneous expenses:			
General		2,028.42	
			13,840.05
Revere Beach Reservation			
Labor and teaming:			
General	$41,289.36		
Road repairs	46.71		
		$41,336.07	
Street lighting		7,913.17	
Supplies and miscellaneous expenses:			
General		9,421.78	
			58,671.02

Lynn Shore Reservation:				
Labor and teaming:				
General	$9,663.03			
Road repairs	315.79			
		$9,978.82		
Street lighting		2,354.81		
Supplies and miscellaneous expenses:				
General	$3,362.66			
Road repairs	150.92			
		3,513.58		
			$15,847.21	
Winthrop Shore Reservation:				
Labor and teaming:				
General	$7,641.08			
Road repairs	1,004.51			
		$8,645.59		
Street lighting		609.84		
Supplies and miscellaneous expenses:				
General	$1,548.22			
Road repairs	1,055.30			
		2,603.52		
			11,858.95	
Charles River Upper Division:				
Labor and teaming:				
General	$38,698.34			
Moth work	2,668.20			
Road repairs	9,666.94			
		$51,033.48		
Street lighting		1,342.19		
Supplies and miscellaneous expenses:				
General	$17,151.09			
Road repairs	2,798.42			
		19,949.51		
			72,325.18	
Riverside Recreation Grounds:				
Labor and teaming:				
General		$4,607.25		
Supplies and miscellaneous expenses:				
General		3,004.25		
			7,611.50	
Beaver Brook Reservation:				
Labor and Teaming:				
General	$2,708.86			
Moth work	567.00			
		$3,275.86		
Supplies and miscellaneous expenses:				
General		1,163.16		
			4,439.02	
Cambridge Parkway:				
Labor and teaming:				
General	$28,816.85			
Moth work	909.75			
Road repairs	1,566.00			
		$31,292.60		
Street lighting		3,521.14		
Supplies and miscellaneous expenses:				
General	$8,595.56			
Road repairs	1,050.29			
		9,645.85		
			44,459.59	$729,555.15
Balance, Dec. 1, 1926				$50,039.48

METROPOLITAN PARKS MAINTENANCE FUND — SPECIALS

Band Concerts

Appropriation (Chapter 79, Acts of 1926)			$20,000.00
Expenditures			
Advertising		$37.10	
Bands:			
Blue Hills Division	$1,013.20		
Middlesex Fells Division	2,495.00		
Revere Beach Division	4,030.00		
Charles River Upper Division	2,993.60		
Nantasket Beach Division	9,257.50		
Bunker Hill	165.00		
		19,954.30	
			19,991.40
Balance, Dec. 1, 1926			$8.60

Clearing Woods

Appropriation (amount approved for Workmen's Compensation Act)	$2,883.86
Expended to Dec. 1, 1925	1,372.57
	$1,511.29
Expenditures	
Industrial accident compensation	659.29
Balance, Dec. 1, 1926	$852.00

Metropolitan Parks Maintenance Fund—Specials—Concluded

QUINCY SHORE RESERVATION

Appropriation (Chapter 79, Acts of 1926)				$140,000.00
Expenditures				
Construction:				
Contract, Paul Caputo		$115,057.68		
Labor and materials		6,001.83		
			$121,059.51	
Engineering:				
Services		$5,038.50		
Supplies and expenses		421.18		
			5,459.68	
Printing			106.82	
Advertising			104.60	
				126,730.61
Balance, Dec. 1, 1926				$13,269.39

WATER PIPE, REVERE BEACH RESERVATION

Appropriation (Chapter 79, Acts of 1926)				$7,500.00
No expenditures				—
Balance, Dec. 1, 1926				$7,500.00

CERTAIN LANDS, MYSTIC LAKES

Appropriation (Chapter 398, Acts of 1926)				$25,000.00
No expenditures				—
Balance, Dec. 1, 1926				$25,000.00

REPAIRING SEA-WALL, WINTHROP

Appropriation (Chapter 398, Acts of 1926)				$40,000.00
Expenditures				
Construction:				
Labor and materials				39,922.50
Balance, Dec. 1, 1926				$77.50

NAHANT BEACH PLAYGROUND

Appropriation (Chapter 430, Acts of 1924)				$5,000.00
Expended to Dec. 1, 1925				3,032.50
				$1,967.50
Expenditures				
Construction:				
Labor and materials				1,058.88
				$908.62*

*Reverted.

METROPOLITAN PARKS MAINTENANCE FUND, BOULEVARDS, GENERAL

Appropriation, Dec. 1, 1925, to Dec. 1, 1926				$443,000.00
Balance brought forward from 1925 appropriation to cover 1925 expenditures on 1926 books				48.41
				$443,048.41
Expenditures				
Administration:				
Police			$87,938.41	
Salaries:				
Commissioners	$2,500.00			
Secretary and clerks, etc.	13,515.50			
Chief Engineer and Assistants	17,085.27			
			33,100.77	
Rent, care and lighting of building			1,948.16	
Stationery, office supplies and expenses			2,680.23	
Printing			64.63	
Engineering supplies and expenses:				
General	$874.33			
Auto expense	167.29			
			1,041.62	
				$126,773.82
Blue Hills Parkway:				
Labor and teaming:				
General	$6,507.67			
Moth work	45.50			
			$6,553.17	
Street lighting			2,385.93	
Supplies and miscellaneous expenses:				
General	$1,035.61			
Road repairs	391.49			
			1,427.10	
				10,366.20
Neponset River Parkway:				
Labor and teaming:				
General	$886.50			
Moth work	38.75			
			$925.25	
Supplies and miscellaneous expenses:				
General	$233.46			
Road repairs	40.83			
			274.29	
				1,199.54

Metropolitan Parks Maintenance Fund, Boulevards, General—Continued

Furnace Brook Parkway:			
Labor and teaming:			
General	$6,618.01		
Moth work	45.50		
		$6,663.51	
Street lighting		2,705.30	
Supplies and miscellaneous expenses:			
General	$734.08		
Road repairs	263.83		
		997.91	
			10,366.72
Old Colony Parkway:			
Labor and teaming:			
General		$2,848.44	
Street lighting		1,848.23	
Supplies and miscellaneous expenses:			
General		609.83	
			5,306.50
West Roxbury Parkway:			
Labor and Teaming:			
General	$1,092.89		
Moth work	475.18		
		1,568.07	
Supplies and miscellaneous expenses:			
General	410.72		
Road repairs	237.70		
		648.42	
			2,216.49
Dedham Parkway:			
Labor and teaming:			
General		$60.00	
Supplies and miscellaneous expenses:			
Road repairs		126.33	
			186.33
Middlesex Fells Parkway:			
Labor and teaming:			
General	$20,733.00		
Moth work	467.79		
Road repairs	4,966.63		
		$26,167.42	
Street lighting		11,341.96	
Supplies and miscellaneous expenses:			
General	$4,124.98		
Road repairs	3,830.82		
		7,955.80	
			45,465.18
Mystic Valley Parkway:			
Labor and teaming:			
General	$18,239.34		
Moth work	331.26		
Road repairs	845.37		
		$19,415.97	
Street lighting		4,881.86	
Supplies and miscellaneous expenses:			
General	$7,969.91		
Road repairs	608.32		
		8,578.23	
			32,876.06
Lynn Fells Parkway:			
Labor and teaming:			
General	$4,069.45		
Moth work	39.68		
Road repairs	132.65		
		$4,241.78	
Street lighting		786.39	
Supplies and miscellaneous expenses:			
General	$580.71		
Road repairs	318.69		
		899.40	
			5,927.57
Middlesex Fells Roads:			
Labor and teaming:			
General	$6,094.53		
Road repairs	2,506.70		
		$8,601.23	
Street lighting		2,220.98	
Supplies and miscellaneous expenses:			
General	$673.37		
Road repairs	1,272.28		
		1,945.65	
			12,767.86
Woburn Parkway:			
Labor and teaming:			
General	$3,875.79		
Moth work	362.78		
		$4,238.57	
Supplies and miscellaneous expenses:			
General		1,351.40	
			5,589.97

Metropolitan Parks Maintenance Fund, Boulevards, General—Continued

Alewife Brook Parkway:			
Labor and teaming:			
General	$5,966.88		
Moth work	41.26		
Road repairs	465.41		
		$6,473.55	
Street lighting		638.15	
Supplies and miscellaneous expenses:			
General	$2,269.02		
Road repairs	542.20		
		2,811.22	
			$9,922.92
Revere Beach Parkway:			
Labor and teaming:			
General	$25,538.66		
Moth work	200.28		
Road repairs	1,744.93		
		$27,483.87	
Street lighting		11,516.06	
Supplies and miscellaneous expenses:			
General	$11,945.41		
Road repairs	1,229.28		
		13,174.69	
			52,174.62
Nahant Beach Parkway:			
Labor and teaming:			
General		$5,977.22	
Street lighting		869.16	
Supplies and miscellaneous expenses:			
General		254.20	
			7,100.58
Winthrop Parkway:			
Labor and teaming:			
General	$2,034.73		
Road repairs	46.71		
		$2,081.44	
Street lighting		1,225.51	
Supplies and miscellaneous expenses:			
General		24.50	
			3,331.45
Lynnway:			
Labor and teaming:			
General	$10,996.89		
Road repairs	162.73		
		$11,159.62	
Street lighting		238.26	
Supplies and miscellaneous expenses:			
General	$2,570.65		
Road repairs	53.90		
		2,624.55	
			14,022.43
Hammond Pond Parkway:			
Labor and teaming:			
General	$270.00		
Moth work	2,511.00		
		$2,781.00	
Supplies and miscellaneous expenses:			
General		149.80	
			2,930.80
Fresh Pond Parkway:			
Labor and teaming:			
General	$4,346.26		
Moth work	136.50		
Road repairs	352.00		
		$4,834.76	
Street lighting		302.49	
Supplies and miscellaneous expenses:			
General	$1,104.87		
Road repairs	382.28		
		1,487.15	
			6,624.40
Cottage Farm Bridge:			
Labor and teaming:			
General	$6,027.45		
Road repairs	324.00		
		$6,351.45	
Street lighting		365.22	
Supplies and miscellaneous expenses:			
General		799.00	
			7,515.67
Harvard Bridge:			
Labor and teaming:			
General	$1,971.00		
Road repairs	90.00		
		$2,061.00	
Street lighting		1,913.67	
Supplies and miscellaneous expenses:			
Road repairs		58.87	
			4,033.54

Metropolitan Parks Maintenance Fund, Boulevards, General—Concluded

Neponset Bridge:			
Labor and teaming:			
General	$7,626.30		
Street lighting	1,661.18		
Supplies and miscellaneous expenses:			
General	1,048.73		
		$10,336.21	
Western Avenue Bridge:			
Street lighting		366.64	
			$377,401.50
Balance, Dec. 1, 1926			$65,646.91

METROPOLITAN PARKS MAINTENANCE FUND, BOULEVARDS — SPECIALS

Blue Hill River Road

Appropriation (Chapter 211, Acts of 1925)	$75,000.00
No expenditures	—
Balance, Dec. 1, 1926	$75,000.00

Stoneham-Wakefield Parkway

Appropriation (Chapter 409, Acts of 1924)	$5,000.00
Expended to Dec. 1, 1925	687.50
	$4,312.50

Expenditures

Engineering:	
Supplies and expenses	15.05
Balance, Dec. 1, 1926	$4,297.45*

*Reverted.

West Roxbury Parkway Extension

Appropriation (Chapter 313, Acts of 1925)	$222,000.00
Expended to Dec. 1, 1925	1,853.94
	$220,146.06

Expenditures

Construction:			
Contract, Thomas J. McCue Const. Co.	$76,966.76		
Labor and materials	8,738.94		
		$85,705.70	
Land		14,103.85	
Engineering:			
Services	$6,709.53		
Supplies and expenses	30.01		
		6,739.54	
Legal:			
Services		56.35	
Claims		1,500.00	
Advertising		56.25	
			108,161.69
Balance, Dec. 1, 1926			$111,984.37

Installation Electric Lighting System

Appropriation (Chapter 79, Acts of 1926)	$50,000.00
Balance brought forward from 1925 appropriation to cover 1925 expenditures on 1926 books	16,651.50
	$66,651.50

Expenditures

Installation of conduits, etc.:			
Labor	$19,559.01		
Materials	38,652.99		
		$58,212.00	
Engineering:			
Services	$587.34		
Supplies and expenses	45.44		
		632.78	
			58,844.78
Balance, Dec. 1, 1926			$7,806.72

Resurfacing Boulevards and Parkways

Appropriation (Chapter 79, Acts of 1926)	$100,000.00

Expenditures

Furnace Brook Parkway:			
Construction:			
Contract, E. C. Sargent	$2,278.23		
Labor and materials	4,556.47		
		$6,834.70	
Engineering:			
Supplies and expenses		4.40	
			$6,839.10

Metropolitan Parks Maintenance Fund, Boulevards—Specials—Continued

Middlesex Fells Parkway:					
Construction:					
Contracts:					
Coleman Brothers	$5,660.39				
James Fannon	27,466.61				
		$33,127.00			
Labor and materials		18,640.32			
			$51,767.32		
Engineering:					
Services		$1,973.60			
Supplies and expenses		28.02			
			2,001.62		
Advertising bids			113.85		
				$53,882.79	
Revere Beach Parkway:					
Construction:					
Contract, J. F. White Cont. Co.		$2,464.64			
Labor and materials		11,385.24			
			$13,849.88		
Engineering:					
Services		$126.30			
Supplies and expenses		7.20			
			133.50		
				13,983.38	
					$74,705.27
Balance, Dec. 1, 1926					$25,294.73

QUINCY SHORE ROADWAY

Appropriation (Chapter 79, Acts of 1926)					$140,000.00
Expenditures					
Construction:					
Contract, Paul Caputo			$76,442.62		
Labor and materials			8,308.84		
				$84,751.46	
Engineering:					
Services			$1,190.50		
Supplies and expenses			54.56		
				1,245.06	
					85,996.52
Balance, Dec. 1, 1926					$54,003.48

LAND FOR BOULEVARDS, STONEHAM

Appropriation (Chapter 398, Acts of 1926)					$10,000.00
Expenditures					
Engineering:					
Services				$1,305.47	
Supplies and expenses				6.80	
					1,312.27
Balance, Dec. 1, 1926					$8,687.73

OLD COLONY BOULEVARD

Appropriation (Chapter 398, Acts of 1926)					$250,000.00
Expenditures					
Construction:					
Contracts:					
Bay State Dredging Co.		$26,461.82			
Coleman Brothers, Inc.		7,343.23			
			$33,805.05		
Labor and materials			1,195.63		
				$35,000.68	
Engineering:					
Services			$767.40		
Supplies and expenses			72.35		
				839.75	
Legal:					
Expenses				1.42	
					35,841.85
Balance, Dec. 1, 1926					$214,158.15

WESTERN AVENUE BOULEVARD

Appropriation (Chapter 398, Acts of 1926)					$70,000.00
Expenditures					
Construction:					
Contract, Thomas J. McCue Const. Co.			$25,915.58		
Labor and materials			3,039.54		
				$28,955.12	
Engineering:					
Services			$2,462.31		
Supplies and expenses			4.35		
				2,466.66	
Advertising bids				103.85	
					31,525.63
Balance, Dec. 1, 1926					$38,474.37

COTTAGE FARM BOULEVARD

Appropriation (Chapter 398, Acts of 1926)					$50,000.00

Metropolitan Parks Maintenance Fund, Boulevards—Specials—Concluded

Expenditures

Engineering:				
Services			$314.82	
Supplies and expenses			2.35	
				$317.17
Balance, Dec. 1, 1926				$49,682.83

CIRCUMFERENTIAL HIGHWAY

Appropriation (Chapter 398, Acts of 1926)				$115,000.00

Expenditures

Engineering:				
Services				360.00
Balance, Dec. 1, 1926				$114,640.00

CHARLES RIVER BASIN MAINTENANCE

Appropriation, Dec. 1, 1925, to Dec. 1, 1926				$200,000.00
Balance brought forward from 1925 appropriation to cover 1925 expenditures on 1926 books				4,399.75
				$204,399.75

Expenditures

Park and Water Areas:				
Police		$64,399.94		
Labor and teaming:				
General	$37,864.37			
Road repairs	355.50			
		38,219.87		
Street lighting		3,640.01		
Supplies and miscellaneous expenses:				
General	$8,447.85			
Road repairs	97.02			
		8,544.87		
			$114,804.69	
Locks, Gates and Drawbridges:				
General labor		$56,809.77		
Supplies and miscellaneous expenses		8,968.73		
			65,778.50	
				180,583.19
Balance, Dec. 1, 1926				$23,816.56

NANTASKET BEACH MAINTENANCE

Appropriation, Dec. 1, 1925, to Dec. 1, 1926				$82,500.00

Expenditures

Police			$26,029.75	
Labor and teaming:				
General	$36,368.90			
Road repairs	365.20			
		$36,734.10		
Street lighting		1,646.08		
Supplies and miscellaneous expenses:				
General	$13,031.86			
Road repairs	824.40			
		13,856.26		
			52,236.44	
				78,266.19
Balance, Dec. 1, 1926				$4,233.81

WELLINGTON BRIDGE MAINTENANCE

Appropriation, Dec. 1, 1925, to Dec. 1, 1926				$31,000.00

Expenditures

General labor			$11,000.10	
Street lighting			1,609.92	
General supplies and miscellaneous expenses			1,903.59	
Repaving and repairing			15,000.00	
				29,513.61
Balance, Dec. 1, 1926				$1,486.39

BUNKER HILL MAINTENANCE

Appropriation, Dec. 1, 1925, to Dec. 1, 1926				$10,500.00
Balance brought forward from 1925 appropriation to cover 1925 expenditures on 1926 books				7.35
				$10,507.35

Expenditures

Police			$4,129.69	
Labor and teaming:				
General		$4,698.75		
Supplies and miscellaneous expenses:				
General		1,571.99		
			6,270.74	
				10,400.43
Balance, Dec. 1, 1926				$106.92

LIGHTING OF BUNKER HILL MONUMENT

Appropriation				$1,500.00

Expenditures

Installation of flood lighting:				
Labor			$281.68	
Materials			1,196.81	
				1,478.49
Balance, Dec. 1, 1926				$21.51

ANALYSIS OF 1926 RECEIPTS

Parks Division

Credited to:				
Expense Fund			$176,733.70	
General Revenue			4,507.50	
Previous years' accounts:				
Charles River Basin Maintenance	$28.90			
Metropolitan Parks Maintenance Fund, Boulevards	34.65			
			63.55	
				$181,304.75

BONDS, SINKING FUNDS AND NET DEBT

Metropolitan Parks Construction, Series I.				
Bonds issued:				
Sinking Fund:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$9,485,000.00			
		$9,485,000.00		
Serial:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$324,000.00			
		324,000.00		
			$9,809,000.00	
Serial bonds paid:				
Year ending Nov. 30, 1926		$13,750.00		
Period prior to Dec. 1, 1925		220,250.00		
			234,000.00	
Bonds outstanding Dec. 1, 1926				$9,575,000.00
Sinking Fund:				
Total, Dec. 1, 1926			$5,654,500.89	
Total, Dec. 1, 1925			5,384,712.70	
Increase during 1926				269,788.19
Net Debt:				
Total, Dec. 1, 1926			$3,920,499.11	
Total, Dec. 1, 1925			4,204,037.30	
Decrease during 1926				283,538.19
Metropolitan Parks Construction, Series II.				
Bonds issued:				
Sinking Fund:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$2,567,500.00			
		$2,567,500.00		
Serial:				
Year ending Nov. 30, 1926	$337,500.00			
Period prior to Dec. 1, 1925	2,036,437.50			
		2,373,937.50		
			$4,941,437.50	
Serial bonds paid:				
Year ending Nov. 30, 1926		$95,937.50		
Period prior to Dec. 1, 1925		481,687.50		
			577,625.00	
Bonds outstanding Dec. 1, 1926				4,363,812.50
Sinking Fund:				
Total, Dec. 1, 1926			$1,435,951.37	
Total, Dec. 1, 1925			1,367,193.39	
Increase during 1926				68,757.98
Net Debt:				
Total, Dec. 1, 1926			$2,927,861.13	
Total, Dec. 1, 1925			2,755,056.61	
Increase during 1926				172,804.52
Charles River Basin Construction				
Bonds issued:				
Sinking Fund:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$4,125,000.00			
		$4,125,000.00		
Serial:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$375,000.00			
		375,000.00		
			$4,500,000.00	
Serial bonds paid:				
Year ending Nov. 30, 1926		$10,000.00		
Period prior to Dec. 1, 1925		132,000.00		
			142,000.00	
Bonds outstanding Dec. 1, 1926				4,358,000.00

Bonds, Sinking Funds and Net Debt—Concluded

Sinking Fund:		
Total, Dec. 1, 1926	$1,817,269.44	
Total, Dec. 1, 1925	1,647,740.17	
Increase during 1926		$169,529.27
Net Debt:		
Total, Dec. 1, 1926	$2,540,730.56	
Total, Dec. 1, 1925	2,720,259.83	
Decrease during 1926		179,529.27
CHARLES RIVER BRIDGES CONSTRUCTION		
Notes issued:		
Year ending Nov. 30, 1926	$200,000.00	
Period prior to Dec. 1, 1925	1,000,000.00	1,200,000.00
Notes paid:		
Year ending Nov. 30, 1926		1,000,000.00
Notes outstanding:		
Year ending Nov. 30, 1926		200,000.00
Net debt, Dec. 1, 1926		$200,000.00

SEWERAGE DIVISION

CONSTRUCTION

METROPOLITAN SEWERAGE CONSTRUCTION FUND, NORTH SYSTEM

Total amount appropriated to Dec. 1, 1925					$8,288,500.00
Receipts:					
For period prior to Dec. 1, 1925				$87,514.78	
For the year ending Nov. 30, 1926				783.84	
					88,298.62
					$8,376,798.62
Expenditures					
General:					
Adjustment a/c previous years				$39.68	
Sewer in Medford and Arlington:					
Construction:					
Contracts:					
A. Baruffaldi Co.	$69,021.98				
Antony Cefalo	49,272.79				
		$118,294.77			
Labor and materials		8,545.22			
			$126,839.99		
Land			500.00		
Engineering:					
Services		$16,498.84			
Supplies and expenses		1,055.23			
			17,554.07		
Legal:					
Services:		$162.83			
Expenses		15.69			
			178.52		
City of Medford, damages a/c construction of sewer			3,350.00		
Claims			500.00		
Advertising bids			94.70		
Printing contracts			123.17		
				149,140.45	
Sewer in Reading, Winchester and Woburn:					
Land			$1,000.00		
Legal:					
Services		$7.31			
Expenses		6.29			
			13.60		
				1,363.60	
				$150,543.73	
Amounts charged to Dec. 1, 1925				7,964,118.39	
					8,114,662.12
Balance, Dec. 1, 1926					$262,136.50

METROPOLITAN SEWERAGE CONSTRUCTION FUND, SOUTH SYSTEM

Total amount appropriated to Dec. 1, 1925		$10,002,912.00
Receipts:		
For period prior to Dec. 1, 1925	$24,599.61	
For the year ending Nov. 30, 1926	—	
		24,599.61
		$10,027,511.61
Expenditures		
Adjustment, a/c previous years	$193.61	
Amounts charged to Dec. 1, 1925	10,004,458.98	
		10,004,652.59
Balance, Dec. 1, 1926		$22.859.02

Miscellaneous

SURFACE DRAINAGE IN MALDEN, EVERETT AND REVERE

Appropriation			$70,000.00
Expenditures			
Engineering:			
Services	$429.03		
Supplies and expenses	71.50		
		$500.53	
Consulting engineers		1,582.60	
Legal:			
Services	$607.90		
Expenses	201.30		
		809.20	
			2,892.33
Balance, Dec. 1, 1926			$67,107.67

METROPOLITAN SEWERAGE MAINTENANCE FUND, NORTH SYSTEM — GENERAL

Appropriation, Dec. 1, 1925, to Dec. 1, 1926			$342,200.00
Balance brought forward from 1925 appropriation to cover 1925 expenditures on 1926 books			21,560.67
			$363,760.67
Expenditures			
Administration:			
Salaries:			
Commissioners	$1,583.31		
Secretary and clerks	2,716.67		
Chief engineer and assistants	7,863.32		
		$12,163.30	
Rent, light and heat		1,356.80	
Stationery, office supplies and expenses		898.21	
Printing		130.05	
Engineering supplies and expenses		165.14	
Industrial Accident compensation		1,970.00	
Miscellaneous		19.52	
			$16,703.02
Deer Island Pumping Station:			
Labor		$33,492.26	
Fuel		13,716.09	
Oil, waste and packing		1,056.62	
Water		1,386.00	
Repairs, ordinary		9.85	
Repairs and renewals		1,787.25	
General supplies		579.02	
Miscellaneous expenses		199.58	
New wharf at Deer Island		4,845.00	
			57,071.67
East Boston Pumping Station:			
Labor		$39,372.38	
Fuel		18,262.70	
Oil, waste and packing		1,010.40	
Water		1,995.84	
Repairs and renewals		3,391.29	
General supplies		1,186.03	
Miscellaneous expenses		499.33	
			65,717.97
Charlestown Pumping Station:			
Labor		$25,602.33	
Fuel		8,328.37	
Oil, waste and packing		689.38	
Water		593.34	
Repairs and renewals		467.43	
General supplies		182.39	
Miscellaneous expenses		243.17	
			36,106.41
Alewife Brook Pumping Station:			
Labor		$12,616.36	
Fuel		3,225.38	
Oil, waste and packing		341.21	
Water		854.04	
Repairs and renewals		210.21	
General supplies		40.19	
Miscellaneous expenses		71.11	
			17,358.50
Reading Pumping Station:			
Labor		$6,713.40	
Fuel		103.29	
Oil, waste and packing		3.40	
Repairs and renewals		113.19	
General supplies		3,247.92	
Miscellaneous expenses		519.39	
			10,700.59
Sewer Lines, Buildings and Grounds:			
Engineering assistants		$3,899.17	
Labor		58,117.68	
Automobile supplies and repairs		961.45	
Brick, cement and lime		1,080.82	
Castings, iron work, etc.		2,233.08	
Freight, express and teaming		65.63	
Fuel and lighting		51.74	

Metropolitan Sewerage Maintenance Fund, North System—General—Concluded

Repairs, ordinary	$1,101.12		
Repairs and renewals	2.75		
Lumber, paint, etc.	3,112.35		
Machinery, tools and appliances	321.80		
Rubber and oiled goods	288.14		
Sand, gravel and stone	608.46		
General supplies	3,308.35		
Miscellaneous expenses	4,224.36		
Deer Island Ferry	666.66		
		$80,043.56	
Stables:			
Labor	$2,550.00		
Hay, grain and bedding	513.30		
Vehicles, harnesses, etc.	11.76		
Miscellaneous expenses	188.54		
		3,263.60	
			$286,965.32
Balance, Dec. 1, 1926			$76,795.35

METROPOLITAN SEWERAGE MAINTENANCE FUND, NORTH SYSTEM — SPECIAL

Mill Brook Valley Sewer

Appropriation	$30,000.00
Expended to Dec. 1, 1925	28,616.21
	$1,383.79

Expenditures

Engineering:	
Salaries	1,090.00
	$293.79*

*Reverted.

METROPOLITAN SEWERAGE MAINTENANCE FUND, SOUTH SYSTEM — GENERAL

Appropriation, Dec. 1, 1925 to Dec. 1, 1926	$208,000.00
Balance brought forward from 1925 appropriation to cover 1925 expenditures on 1926 books	14,705.49
	$222,705.49

Expenditures

Administration:			
Salaries:			
Commissioners	$916.69		
Secretary and clerks	2,548.33		
Chief engineer and assistants	5,143.36		
		$8,608.38	
Rent, light and heat		1,199.18	
Stationery, office supplies and expenses		432.62	
Printing		149.81	
Engineering supplies and expenses		33.57	
Industrial Accident compensation		225.00	
Miscellaneous		8.51	
			$10,657.07
Ward Street Pumping Station:			
Labor		$42,995.46	
Fuel		18,816.28	
Oil, waste and packing		1,353.45	
Water		2,364.12	
Repairs, ordinary		116.30	
Repairs and renewals		4,672.66	
General supplies		1,084.10	
Miscellaneous expenses		538.99	
			71,941.36
Quincy Pumping Station:			
Labor		$13,213.60	
Fuel		5,861.02	
Oil, waste and packing		398.61	
Water		438.63	
Repairs and renewals		82.13	
General supplies		179.04	
Miscellaneous expenses		78.08	
			20,251.11
Nut Island Screen House:			
Labor		$14,612.95	
Fuel		2,507.47	
Oil, waste and packing		218.97	
Water		453.13	
Repairs and renewals		458.45	
General supplies		390.36	
Miscellaneous expenses		113.62	
			18,754.95
Sewer Lines, Buildings and Grounds:			
Engineering assistants		$6,460.50	
Labor		39,519.88	
Automobile supplies and repairs		3,151.90	
Brick, cement and lime		59.17	
Castings, iron work, etc.		293.80	
Freight, express and teaming		24.58	
Fuel and lighting		23.52	
Repairs, ordinary		2,104.57	

Metropolitan Sewerage Maintenance Fund, South System—General—Concluded

Lumber, paint, etc.	$394.60		
Machinery, tools and appliances	99.04		
Rubber and oiled goods	28.52		
Sand, gravel and stone	97.35		
General supplies	1,408.70		
Miscellaneous expenses	2,457.47		
Pumping by City of Boston	10,300.00		
		$66,423.60	
Stables:			
Labor	$1,125.00		
Hay, grain and bedding	324.67		
Vehicles, harnesses, etc.	108.20		
Miscellaneous expenses	119.11		
		1,676.98	
			$189,705.07
Balance, Dec. 1, 1926			$33,000.42

ANALYSIS OF 1926 RECEIPTS

Sewerage Division

Credited to:		
Metropolitan Sewerage Construction Fund, North System	$783.84	
Metropolitan Sewerage Interest Fund, North System	20.79	
Metropolitan Sewerage Interest Fund, South System	21.01	
Metropolitan Sewerage Sinking Fund, North System	227.26	
Metropolitan Sewerage Maintenance Fund, North System	173.49	
Metropolitan Sewerage Maintenance Fund, South System	364.95	
Total for year ending Nov. 30, 1926		$1,591.34

BONDS, SINKING FUNDS AND NET DEBT

METROPOLITAN SEWERAGE CONSTRUCTION, NORTH SYSTEM

Bonds issued:				
Sinking Fund:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$6,563,000.00			
		$6,563,000.00		
Serial:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$1,725,500.00			
		1,725,500.00		
			$8,288,500.00	
Serial bonds paid:				
Year ending Nov. 30, 1926		$95,500.00		
Period prior to Dec. 1, 1925		359,000.00		
			454,500.00	
Bonds outstanding Dec. 1, 1926				$7,834,000.00
Sinking Fund:				
Total, Dec. 1, 1926			$5,184,030.57	
Total, Dec. 1, 1925			4,822,233.54	
Increase during 1926				$361,797.03
Net debt:				
Total, Dec. 1, 1926			$2,649,969.43	
Total, Dec. 1, 1925			3,107,266.46	
Decrease during 1926				$457,297.03

METROPOLITAN SEWERAGE CONSTRUCTION, SOUTH SYSTEM

Bonds issued:				
Sinking Fund:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$8,877,912.00			
		$8,877,912.00		
Serial:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$1,125,000.00			
		1,125,000.00		
			$10,002,912.00	
Serial bonds paid:				
Year ending Nov. 30, 1926		$32,000.00		
Period prior to Dec. 1, 1925		243,000.00		
			275,000.00	
Bonds outstanding Dec. 1, 1926				$9,727,912.00
Sinking Fund:				
Total, Dec. 1, 1926			$3,421,007.25	
Total, Dec. 1, 1925			3,129,165.16	
Increase during 1926				$291,842.09
Net debt:				
Total, Dec. 1, 1926			$6,306,904.75	
Total, Dec. 1, 1925			6,630,746.84	
Decrease during 1926				$323,842.09

WATER DIVISION

CONSTRUCTION

METROPOLITAN WATER CONSTRUCTION FUND

Total amount appropriated to Dec. 1, 1925					$46,405,000.00
Chapter 79, Acts of 1926					250,000.00
Chapter 398, Acts of 1926					50,000.00
					$46,705,000.00
Receipts:					
For period prior to Dec. 1, 1925				$290,379.65	
For the year ending Nov. 30, 1926				14,113.13	
					304,492.78
					$47,009,492.78
Expenditures					
General:					
Miscellaneous (a/c adjustment)				$243.86	
Certain Improvements:					
Additional Machinery at Spot Pond:					
Contract, Worthington Pump & Machinery Corp.			$20,000.00		
Engineering:					
Services		$760.73			
Supplies and expenses		33.63			
			794.36		
Labor			711.21		
				21,505.57	
Improving Wachusett Watershed:					
Land			$47,459.00		
Legal:					
Services		$382.86			
Expenses		7.20			
			390.06		
				47,849.06	
Low Service Pipe Lines, Section 51:					
Construction:					
Contracts:					
C. & R. Const. Co.	$45,270.90				
George M. Bryne	10,490.25				
		$55,761.15			
Labor and materials, stock		6,958.71			
			$62,719.86		
Engineering:					
Services		$1,640.39			
Supplies and expenses		112.64			
			1,753.03		
Labor			1,303.81		
				65,776.70	
Southern High Service:					
Engineering:					
Services		$5,880.01			
Supplies and expenses		527.99			
			$6,408.00		
Labor			10.00		
Advertising			22.90		
Printing			71.12		
				6,512.02	
Northern High Service, Section 48:					
Construction:					
Contract, Cenedella Co.		$54,528.20			
Labor and materials		1,034.20			
			$55,562.40		
Engineering:					
Services		$7,750.57			
Supplies and expenses		356.84			
			8,107.41		
Labor			2,799.19		
Land			4,016.00		
Legal:					
Services			50.00		
				70,535.00	
Meters and Connections:					
Labor			$805.63		
Materials			498.15		
				1,303.78	
Weston Aqueduct Supply Mains, Section 10:					
Construction:					
Contract, C. & R., Const. Co.		$6,548.92			
Labor and materials		4,039.97			
			$10,588.89		
Engineering:					
Services		$1,241.72			
Supplies and expenses		7.25			
			1,248.97		
Labor			585.79		
Land			800.00		
Legal:					
Services			26.06		
				13,249.71	

Metropolitan Water Construction Fund—Concluded

Weston Aqueduct Supply Mains, Section 11:				
Construction:				
Contract, T. A. Gillespie	$29,165.36			
Labor and materials	5,390.08			
		$34,555.44		
Engineering:				
Services	$1,059.59			
Supplies and expenses	113.20			
		1,172.79		
Labor		131.22		
			$35,859.45	
Weston Aqueduct Supply Mains, Section 12:				
Construction:				
Contract, C. & R. Const. Co.	$78,299.03			
Labor and materials	2,444.40			
		$80,743.43		
Engineering:				
Services	$4,656.57			
Supplies and expenses	314.81			
		4,971.38		
Labor		1,141.78		
Land		950.00		
Claims		550.00		
Legal		2.15		
			$88,358.74	
Weston Aqueduct Supply Mains, Watertown Branch:				
Construction:				
Contract, C. & R. Const. Co.	$56,281.90			
Labor and materials	289.86			
		$56,571.76		
Engineering:				
Services	$6,591.11			
Supplies and expenses	339.79			
		6,930.90		
Labor		370.77		
Advertising		44.10		
Printing		136.22		
			64,053.75	
Weston Aqueduct Supply Mains, Section A:				
Engineering:				
Services	$646.73			
Supplies and expenses	.97			
		$647.70		
Labor		15.26		
		662.96		
Stock not distributed		682.63		
		$416,593.23		
Less stock transferred to other accounts		7,011.61		
		$409,581.62		
Amounts charged to Dec. 1, 1925		46,249,819.88		
				$46,659,401.50
Balance, Dec. 1, 1926				$350,091.28

METROPOLITAN WATER MAINTENANCE FUND — GENERAL

Appropriation, Dec. 1, 1925, to Dec. 1, 1926	$802,445.00
Balance brought forward from 1925 appropriation to cover 1925 expenditures on 1926 books	34,407.06
	$836,852.06

Expenditures

Administration:			
Salaries:			
Commissioners	$2,500.00		
Secretary and clerks	6,056.32		
Chief engineer and assistants	25,381.74		
		$33,938.06	
Rent, light and heat		2,386.48	
Stationery, office supplies and expenses		3,138.87	
Printing		363.63	
Engineering supplies and expenses		4,534.93	
Biological laboratory:			
Labor	$2,537.74		
Supplies and expenses	381.74		
		2,919.48	
Payments in lieu of taxes		53,445.53	
Industrial Accident compensation		1,816.07	
Miscellaneous		218.13	
			$102,761.18
Wachusett Department			
Superintendence:			
Labor	$10,116.24		
Supplies and expenses	1,153.43		
		$11,269.67	
Reservoir:			
Labor	$22,803.67		
Supplies and expenses	4,626.82		
		27,403.49	

Metropolitan Water Maintenance Fund—General—Continued

Forestry:				
Labor			$9,887.97	
Supplies and expenses			759.46	
				$10,647.43
Protection of supply:				
Labor			$5,844.14	
Supplies and expenses			1,685.03	
				7,529.17
Buildings and grounds:				
Labor			$4,271.32	
Supplies and expenses			1,578.81	
				5,850.13
Wachusett Dam:				
Labor			$9,745.68	
Supplies and expenses			1,398.62	
				11,144.30
Wachusett Aqueduct:				
Labor			$9,705.75	
Supplies and expenses			1,574.78	
				11,280.53
Clinton Sewerage System:				
Pumping Station:				
Labor	$1,068.02			
Repairs and supplies	263.78			
		$1,331.80		
Sewers, screens and filter beds:				
Labor	$7,618.95			
Repairs and supplies	1,794.18			
		9,413.13		
				10,744.93
Sanitary inspection:				
Labor			$1,346.62	
Supplies and expenses			456.33	
				1,802.95
Swamp drainage:				
Labor			$12,683.45	
Supplies and expenses			3,594.55	
				16,278.00
Power plant:				
Labor			$9,605.31	
Supplies and expenses			6,106.34	
				15,711.65
Wachusett-Sudbury Power Transmission Line:				
Supplies and expenses				46.57
				$129,735.82
Sudbury Department:				
Superintendence:				
Labor			$11,681.80	
Supplies and expenses			1,629.72	
				$13,311.52
Ashland Reservoir:				
Labor			$3,982.82	
Supplies and expenses			224.81	
				4,207.63
Hopkinton Reservoir:				
Labor			$3,039.83	
Supplies and expenses			288.89	
				3,328.72
Whitehall Reservoir:				
Labor			$4,347.06	
Supplies and expenses			15.32	
				4,362.38
Framingham Reservoirs, 1, 2 and 3:				
Labor			$12,923.91	
Supplies and expenses			2,107.09	
				15,031.00
Sudbury Reservoir:				
Labor			$17,181.34	
Supplies and expenses			2,489.46	
				19,670.80
Lake Cochituate:				
Labor			$10,047.60	
Supplies and expenses			1,230.45	
				11,278.05
Marlboro Brook filters:				
Labor			$4,242.72	
Supplies and expenses			285.70	
				4,528.42
Pegan filters:				
Labor			$5,879.59	
Supplies and expenses			642.31	
				6,521.90
Sudbury and Cochituate Watersheds:				
Labor			$2,315.50	
Supplies and expenses			176.49	
				2,491.99
Sanitary inspection:				
Labor			$4,275.88	
Supplies and expenses			297.01	
				4,572.89

Metropolitan Water Maintenance Fund—General—Continued

Cochituate Aqueduct:			
Labor	$4,322.60		
Supplies and expenses	376.41		
		$4,699.01	
Sudbury Aqueduct:			
Labor	$9,016.00		
Supplies and expenses	984.68		
		10,000.68	
Western Aqueduct:			
Labor	$8,382.06		
Supplies and expenses	1,051.76		
		9,433.82	
Forestry:			
Labor	$6,289.75		
Supplies and expenses	115.65		
		6,405.40	
Sudbury power plant:			
Labor	$12,450.72		
Supplies and expenses	558.87		
		13,009.59	
			$132,853.80
Distribution Department			
Superintendence:			
Labor	$11,685.96		
Supplies and expenses	1,143.40		
		$12,829.36	
Fisher Hill Reservoir:			
Labor	$2,251.46		
Supplies and expenses	278.50		
		2,529.96	
Bellevue Reservoir:			
Labor	$202.50		
Supplies and expenses	128.23		
		330.73	
Arlington Reservoir:			
Labor	$369.25		
Supplies and expenses	128.50		
		497.75	
Bear Hill Reservoir:			
Labor	$414.50		
Supplies and expenses	41.88		
		456.38	
Chestnut Hill Reservoir and grounds:			
Labor	$14,648.45		
Supplies and expenses	3,619.96		
		18,268.41	
Fells Reservoir:			
Labor	$1,506.19		
Supplies and expenses	119.48		
		1,625.67	
Forbes Hill Reservoir:			
Labor	$1,664.84		
Supplies and expenses	172.94		
		1,837.78	
Mystic Lake, Conduit and Pumping Station:			
Labor	$1,554.50		
Supplies and expenses	3,697.43		
		5,251.93	
Mystic Reservoir:			
Labor	$1,998.50		
Supplies and expenses	493.50		
		2,492.00	
Waban Hill Reservoir:			
Labor	$255.00		
Supplies and expenses	91.29		
		346.29	
Weston Reservoir:			
Labor	$5,569.47		
Supplies and expenses	927.27		
		6,496.74	
Spot Pond:			
Labor	$9,158.70		
Supplies and expenses	1,164.42		
		10,323.12	
Buildings at Spot Pond:			
Labor	$803.34		
Supplies and expenses	566.67		
		1,370.01	
Low Service Pipe Lines:			
Labor	$45,925.77		
Supplies and expenses	11,933.10		
		57,858.87	
Northern High Service Pipe Lines:			
Labor	$13,135.70		
Supplies and expenses	42,135.64		
		55,271.34	
Northern Extra High Service Pipe Lines:			
Labor	$63.25		
Supplies and expenses	15.44		
		78.69	

Metropolitan Water Maintenance Fund—General—Concluded

Southern High Service Pipe Lines:					
Labor	$10,851.61				
Supplies and expenses	2,165.09				
		$13,016.70			
Southern Extra High Service Pipe Lines:					
Labor	$2,686.68				
Supplies and expenses	3,020.91				
		5,707.59			
Supply Pipe Lines:					
Labor	$5,562.21				
Supplies and expenses	1,421.47				
		6,983.68			
Buildings at Chestnut Hill Reservoir:					
Labor	$6,272.50				
Supplies and expenses	942.80				
		7,215.30			
Chestnut Hill Pipe Yard:					
Labor	$4,126.60				
Supplies and expenses	178.45				
		4,305.05			
Glenwood Pipe Yard and buildings:					
Labor	$4,294.59				
Supplies and expenses	920.41				
		5,215.00			
Stables and garages:					
Labor	$3,574.14				
Supplies and expenses	4,963.00				
		8,537.14			
Venturi meters:					
Labor	$1,625.62				
Supplies and expenses	17.54				
		1,643.16			
Measurement of water:					
Labor	$3,272.96				
Supplies and expenses	630.76				
		3,903.72			
Arlington Pumping Station, buildings and grounds:					
Labor	$904.97				
Supplies and expenses	22.60				
		927.57			
Hyde Park Buildings and grounds:					
Labor	$382.34				
Supplies and expenses	21.64				
		403.98			
			$235,723.92		
Less stock transferred			599.43		
				$235,124.49	
Pumping Service:					
Superintendence:					
Labor	$7,971.90				
Supplies and expenses	733.20				
		$8,705.10			
Arlington Pumping Station:					
Labor	$12,487.38				
Supplies and expenses	4,110.55				
		16,597.93			
Chestnut Hill Pumping Station No. 2:					
Labor	$50,715.18				
Supplies and expenses	28,687.17				
		79,402.35			
Chestnut Hill Pumping Station No. 1:					
Labor	$25,844.17				
Supplies and expenses	14,655.46				
		40,499.63			
Spot Pond Pumping Station:					
Labor	$16,625.57				
Supplies and expenses	13,690.42				
		30,315.99			
Hyde Park Pumping Station:					
Labor	$9,313.78				
Supplies and expenses	2,828.68				
		12,142.46			
				187,663.46	$788,138.75
Balance, Dec. 1, 1926					$48,713.31

METROPOLITAN WATER MAINTENANCE FUND — SPECIAL

Filtration of Water

Appropriation		$25,000.00
Expended to Dec. 1, 1925		23,280.78
		$1,719.22

Expenditures

Engineering:		
Services	$1,682.78	
Supplies and expenses	36.44	
		$1,719.22

ANALYSIS OF 1926 RECEIPTS

Water Division

Credited to:			
Metropolitan Water Construction Fund		$14,113.13	
Metropolitan Water Interest Fund		68.82	
Metropolitan Water Construction Sinking Fund		105,105.16	
Metropolitan Water Maintenance Fund		3,099.37	
			$122,386.48

Bonds, Sinking Funds and Net Debt

Metropolitan Water Construction				
Bonds issued:				
Sinking Fund:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$41,398,000.00			
		$41,398,000.00		
Serial:				
Year ending Nov. 30, 1926	—			
Period prior to Dec. 1, 1925	$4,287,000.00			
		4,287,000.00		
			$45,685,000.00	
Serial bonds paid:				
Year ending Nov. 30, 1926		$115,000.00		
Period prior to Dec. 1, 1925		507,000.00		
			622,000.00	
Bonds outstanding Dec. 1, 1926				$45,063,000.00
Sinking Fund:				
Total, Dec. 1, 1926			$23,571,873.99	
Total, Dec. 1, 1925			22,478,585.22	
Increase during 1926				$1,093,288.77
Net debt:				
Total, Dec. 1, 1926			$21,491,126.01	
Total, Dec. 1, 1925			22,699,414.78	
Decrease during 1926				$1,208,288.77

Appendix No. 1

Contracts made and pending during the

	Number of Contract	WORK	Number of Bids	Lowest
1	89	Grading and other work, North Avenue to Lowell Street, Quannapowitt Parkway, Wakefield.	17	$35,308 00
2	90	Grading, surfacing, building bridge and other work near Pope's Hill Station, Old Colony Parkway.	5	118,971 80
3	91	Building reinforced concrete shore protection and reconstruction of roadway, Hancock Street to Fenno Street, Quincy Shore Reservation.	11	250,740 00
4	92	Building bridge and retaining walls over Boston & Maine Railroad near Medford Street, Somerville, Northern Traffic Artery.	11	202,271 00
5	93	Building reinforced concrete bridge over the Charles River, opposite DeWolfe Street, Cambridge (John W. Weeks Bridge).	6	160,845 00
6	94	Grading, surfacing and other work, Weld Street to Newton Street, West Roxbury Parkway.	9	74,215 00
7	95	Grading, surfacing and other work, Western Avenue and Arsenal Street Bridges.	6	18,000 00
8	96	Repaving and repairing Wellington Bridge, Middlesex Fells Parkway.	9	23,925 00
9	97	Grading, surfacing and other work, Lechmere Square to Boston & Maine Bridge, Northern Artery, Cambridge.	12	287,523 00
10	98	Grading, surfacing and other work, Boston & Maine Railroad Bridge to Mystic Avenue, Northern Artery, Somerville.	10	224,303 00
11	99	Rebuilding retaining wall northerly from Broad Canal, Lower Basin Section.	5	53,175 00
12	99A	Rebuilding retaining wall at Bay State Road Extension.		Extra Order
13	100	Excavating and grading near approaches to Cottage Farm Bridge.	8	7,800 00
14	101	Surfacing westerly roadway Forest Street to Elm Street, Middlesex Fells Parkway to Highland Avenue, Medford, and section of South Border Road.	4	22,420 00
15	102	Grading, surfacing and other work, Boston & Maine Bridge to Mystic Avenue, Somerville.	9	204,591 80
16	103	Grading, surfacing and other work, North Harvard Street to Western Avenue, Boston.	7	40,054 00
17	62	Building bridges over Charles River at Essex Street and Brookline Street, Cottage Farm Bridges.	5	1,118,350 00

Appendix No. 1

Year 1926—Parks Division

Contractor	Date of Contract	Date of Completion of Contract	Value of Work done December 31, 1926
Greenough Construction Company.	Feb. 11, 1926	June 18, 1926	$29,127 44
Coleman Bros., Inc.	Sept. 23, 1926		33,739 79
Paul Caputo.	May 13, 1926	Nov. 24, 1926	228,186 81
Coleman Bros., Inc.	May 20, 1926		226,126 09
T. Stuart & Son Co.	July 1, 1926		194,408 46
Thos. J. McCue Construction Co.	May 13, 1926	Nov. 24, 1926	100,548 27
Simpson Bros. Corp.	May 20, 1926	June 8, 1926	11,563 03
Simpson Bros. Corp.	May 20, 1926	July 21, 1926	21,419 74
Coleman Bros. Inc.	June 10, 1926		343,428 51
James H. Fannon.	Bids rejected.		
Bay State Dredging & Contracting Co.	July 15, 1926		32,895 14
Bay State Dredging & Contracting Co.	Oct. 22, 1926	Dec. 2, 1926	8,979 14
J. F. White Contracting Company.	July 15, 1926		3,373 50
James H. Fannon.	July 29, 1926	Nov. 20, 1926	34,812 76
Coleman Bros., Inc.	July 29, 1926		173,035 78
Thos. J. McCue Construction Company.	Sept. 9, 1926		39,730 66
T. Stuart & Son Co.	Oct. 28, 1926		12,498 50

Appendix No. 2

Contracts made and pending during the

(The details of Contracts made before

1 Number of Contract	2 WORK	3 Number of Bids	Amount of Bid 4 Next to Lowest	 5 Lowest	6 Contractor
35[1]	Building and erecting pumping engine for Spot Pond Pumping Station.	3	$69,000 00[2]	$67,470 00	Worthington Pump & Machinery Corporation, New York, N. Y.
48[1]	Furnishing and laying 60-inch riveted steel water pipes in Arlington and Somerville.	5	206,921 40 (for Lock-bar steel pipe.)	205,775 00[2]	C. & R. Construction Co. Boston, Mass.
50[1]	Furnishing and laying 38-inch riveted steel water pipes in Malden, Melrose and Stoneham.	5	153,580 00	141,325 00[2]	Cenedella & Co., Milford, Mass.
54	Furnishing and laying 30-inch riveted steel water pipes in Boston, Cambridge, Waltham and Watertown.	4	101,471 00	79,855 00[2]	C. & R. Construction Co., Boston, Mass.
55	Furnishing water valves: 10 12-inch, 10 16-inch, 4 20-inch, 2 24-inch, 2 30-inch and 8 36-inch screw lift valves and 3 36-inch hydraulic lift valves.	6	38,603 00	27,575 00[2]	Feil Manufacturing Co., Chicago, Ill.
21-M	Sale and cutting of chestnut and miscellaneous standing timber on marginal lands of of the Wachusett Reservoir.	2	5,000 00[3]	9,750 00[2, 4]	Wilder, Walker & Davis Co., Sterling, Mass.
23-M[1]	Cleaning of Mystic water mains.	—[5]	—[5]	—[5]	National Water Main Cleaning Co., New York, N. Y.
25-M[1]	Repairing roofs of Department buildings in Somerville and Medford.	3	3,280 00	2,982 00[2]	Everett F. Penshorn, Boston, Mass.

Appendix No. 2

Year 1926—Water Division

1926 have been given in previous reports.)

7 Date of Contract.	8 Date of Completion of Contract.	9 Prices of Principal Items of Contracts.	10 Value of Work done Dec. 31, 1926
Oct. 18, 1923	Oct. 18, 1926	See annual report for 1923.	$68,300 00
May 26, 1925	June 16, 1926	See annual report for 1925.	228,229 28
July 30, 1925	Sept. 18, 1926	See annual report for 1925.	144,096 25
July 20, 1926	—	For furnishing and laying 30-inch riveted steel pipe at bridges and culverts, $11.00 per lin. ft.; for furnishing and laying 30-inch riveted steel pipe, $10.75 per lin. ft.; for rock excavation, $6.00 per cu. yd.; for chambers for valves, $80.00 per chamber; for concrete masonry, $10.00 per cu. yd.; for bituminous macadam resurfacing in streets, $1.00 per sq. yd.	81,875 00
Sept. 16, 1926	—	12-inch screw lift valves, $87.50, 16-inch, $205.00, 20-inch, $320.00, 24-inch, $575.00, 30-inch, $1,250.00, 36-inch, $1,670.00 per valve; 36 inch hydraulic lift valves, $2,120 per valve.	19,000 00
Dec. 7, 1923	—	See annual report for 1923.	9,650 00
May 27, 1925	June 9, 1926	See annual report for 1925.	2,023 30
Nov. 14, 1925	May 5, 1926	See annual report for 1925.	3,342 00

1	2	3	Amount of Bid		6
Number of Contract.	WORK	Number of Bids	4 Next to Lowest	5 Lowest	Contractor
27-M[1]	Rewinding stator coils of generator No. 2, Wachusett Power Station.	2	$4,177 50[2] (For furnishing new coils)	$2,100 00 (For reinsulating old coils)	Westinghouse Electric & Manufacturing Company, Boston, Mass.
28-M[1]	Laying 20-inch cast-iron pipe furnished by the Commonwealth and furnishing and laying 20-inch, 16-inch and 12-inch sand-molded, cast-iron, cement-lined water pipes in Lynn.	4	$37,982 00	$34,574 00[2]	C. & R. Construction Company, Boston, Mass.
29-M[1]	Protective equipment at Sudbury Power Station.	2	$1,378 00	$1,241 34[2]	Westinghouse Electric & Manufacturing Company, Boston, Mass.
51-M	Sale and purchase of electric energy to be developed at Wachusett Dam in Clinton.	1	—	$5.30 per M kilowatt hours.	New England Power Company and Edison Electric Illuminating Company of Boston.
Agreement	Sale and purchase of electric energy to be developed at Sudbury Dam in Southborough.	—[6]	—[6]	—[6]	Edison Electric Illuminating Company of Boston.

[1] Contract completed.
[2] Contract based upon this bid.
[3] Next to highest bid.
[4] Highest bid.
[5] Competitive bids were not received.
[6] Sale of energy continued since January 1, 1922 at same price as formerly under modified extension of Contract No. 39-M.

7 Date of Contract	8 Date of Completion of Contract	9 Prices of Principal Items of Contracts.	10 Value of Work done Dec. 31, 1926
May 12, 1926	Sept. 13, 1926	For rewinding stator complete, $3,920; for furnishing 10 spare stator coils, $25.75 each.	$4,177 50
July 20, 1926	Dec. 1, 1926	For laying 20-inch cast-iron pipe furnished by the Commonwealth, $3.50 per lin. ft.; for furnishing and laying 20-inch, sand-molded, cast-iron, cement-lined pipe $9.50 per lin. ft.; for furnishing and laying 16-inch sand-molded, cast-iron, cement-lined pipe, $7.30 per lin. ft.; for furnishing and relaying 12-inch, sand-molded, cement-lined, cast-iron pipe, $5.25 per lin. ft.; for rock excavation above grade, $6.00 per cu. yd.; for rock excavation below grade, $10.00 per cu. yd.; for earth excavation below grade, $3.00 per cu. yd.; for chambers for valves, $80.00 per chamber; for concrete masonry, $10.00 per cu. yd.; for bituminous macadam resurfacing in streets, $1.00 per sq. yd.	$40,023 23
Oct. 5, 1926	Nov. 20, 1926	For replacing 2,300 volt oil circuit breakers on generators Nos. 1, 2 and 3, complete, $1,241.34.	$1,241 34
Jan. 13, 1917	—	See annual report for 1917.	358,189 24
Jan. 1, 1922	—	See annual report for 1922.	163,424 03

Contracts made and pending during the Year 1926—Water Division

Concluded

Summary of Contracts 1895 to 1926 inclusive[1]

	Value of Work done Dec. 31, 1926
Distribution Section, 4 contracts	$473,200 53
Pumping Service, 1 contract	68,300 00
	$541,500 53
450 contracts completed from 1896 to 1925, inclusive	20,112,850 31
	$20,654,350 84
Deduct for work done on 11 Sudbury Reservoir contracts by the city of Boston	512,000 00
Total of 455 contracts	$20,142,350 84

[1] In this summary contracts for the sale of used material and contracts charged to maintenance are excluded.

Appendix No. 3

Table No. 1. — *Monthly Rainfall in inches at Various Places on the Metropolitan Water Works, 1926*

Place	January	February	March	April	May	June	July	August	September	October	November	December	Totals
Wachusett Watershed:													
Princeton	2.37	5.25	3.02	2.21	2.12	2.18	3.05	2.64	1.43	5.35	5.11	3.85	38.58
Jefferson	2.63	6.76	3.01	2.93	1.98	2.23	2.85	3.66	1.66	4.74	6.38	4.63	43.46
Sterling	2.79	5.23	2.74	2.51	2.09	1.63	2.85	2.70	1.24	4.47	4.57	4.18	37.00
Boylston	2.79	5.86	2.93	2.18	1.80	2.15	2.97	2.58	1.40	4.20	5.21	4.13	38.20
Sudbury Watershed:													
Sudbury Dam	2.96	6.05	3.16	2.19	2.30	1.43	2.76	5.38	1.32	3.59	5.16	3.98	40.28
Framingham	3.08	6.11	3.32	2.24	2.32	1.68	3.00	5.21	1.54	3.69	5.32	3.98	41.49
Ashland Dam	2.92	5.76	3.23	2.24	2.45	1.79	3.76	5.60	1.16	3.84	5.07	4.03	41.85
Cordaville	3.06	5.75	3.21	2.16	2.09	1.51	3.18	5.85	1.59	3.96	5.52	4.11	41.99
Lake Cochituate	3.11	5.64	3.51	2.36	2.58	1.59	3.42	4.59	1.32	3.94	4.50	3.85	40.41
Chestnut Hill Reservoir	2.80	6.34	2.85	2.19	2.83	1.57	4.21	3.80	1.16	3.77	4.51	3.79	39.82
Spot Pond	3.07	6.74	3.36	2.32	3.27	1.68	3.95	3.61	1.41	4.36	4.38	4.11	42.26
Average of all	2.87	5.95	3.12	2.32	2.35	1.77	3.27	4.15	1.39	4.17	5.07	4.06	40.49
Average, Wachusett Watershed	2.64	5.77	2.92	2.46	2.00	2.05	2.93	2.90	1.43	4.69	5.32	4.20	39.31
Average, Sudbury Watershed	3.00	5.92	3.23	2.21	2.29	1.60	3.18	5.51	1.40	3.77	5.27	4.03	41.41

TABLE No. 2.—*Rainfall in inches at Chestnut Hill Reservoir, 1926*

Date	Amount	Duration
Jan. 4	.24	9.30 A.M. to 9.00 P.M.
Jan. 5		
Jan. 9	.55[1]	5.00 A.M. to 5.00 P.M.
Jan. 18	.79	6.00 A.M. to 5.00 A.M.
Jan. 19		
Jan. 21	.70[2]	3.00 P.M. to 10.00 A.M.
Jan. 22		
Jan. 26	.04[1]	1.30 P.M. to 3.30 A.M.
Jan. 27		
Jan. 28	.04[1]	9.45 A.M. to 10.30 A.M.
Jan. 31	.44[2]	1.30 P.M. to 7.00 A.M.
Feb. 1		
Total	2.80	
Feb. 1	.42	8.30 A.M. to 4.00 A.M.
Feb. 2		
Feb. 4	2.20[1]	1.30 A.M. to 9.30 P.M.
Feb. 6	.15[1]	8.00 P.M. to 1.15 A.M.
Feb. 7		
Feb. 10	1.03[1]	1.45 A.M. to 2.30 A.M.
Feb. 11		
Feb. 14	1.19[2]	3.15 A.M. to 6.00 A.M.
Feb. 15		
Feb. 18	.44	9.45 P.M. to 7.00 A.M.
Feb. 19		
Feb. 19	.17	3.00 P.M. to 8.00 P.M.
Feb. 22	.03	12.15 A.M. to 6.00 A.M.
Feb. 25	.71	12.45 P.M. to 12.30 A.M.
Feb. 26		
Total	6.34	
March 2	.41	1.20 A.M. to 12.15 P.M.
March 7	.76[2]	5.30 A.M. to 9.00 A.M.
March 8		
March 15	.03[1]	9.00 P.M. to 9.50 P.M.
March 20	.08	2.10 A.M. to 5.10 A.M.
March 20	.33[2]	2.45 P.M. to 9.00 P.M.
March 23	.04	3.00 P.M. to 6.00 P.M.
March 25	.15	6.25 A.M. to 12.30 A.M.
March 26	.29[2]	11.45 A.M. to 1.30 A.M.
March 27		
March 31	.76	11.15 A.M. to 4.30 A.M.
April 1		
Total	2.85	
April 1	.03	7.30 A.M. to 1.00 P.M.
April 3	.34	6.00 P.M. to 4.30 A.M.
April 4		
April 7	.83[2]	5.30 A.M. to 3.30 A.M.
April 9		
April 22	.03	4.50 A.M. to 5.30 A.M.
April 23	.03	12.50 A.M. to 3.30 A.M.
April 25	.76	12.45 A.M. to 4.00 A.M.
April 28	.17	9.15 A.M. to 12.45 A.M.
April 29		
Total	2.19	
May 2	.05	8.40 P.M. to 12.15 A.M.
May 3		
May 4	.09	12.45 A.M. to 4.00 A.M.
May 9	.02	2.00 P.M. to 3.30 A.M.
May 10		
May 11	.15	1.45 P.M. to 9.00 P.M.
May 15	1.98	2.05 P.M. to 2.00 P.M.
May 17		
May 19	.09	10.00 P.M. to 5.30 A.M.
May 20		
May 23	.34	5.45 A.M. to 12.00 M.
May 27	.03	11.15 A.M. to 12.00 M.
May 31	.08	12.15 P.M. to 12.00 M.
Total	2.83	
June 1	.13	8.20 P.M. to 1.30 A.M.
June 2		
June 7	.32	4.00 A.M. to 4.00 P.M.
June 8	.07	6.00 P.M. to 6.30 P.M.
June 15	.42	4.30 P.M. to 1.30 A.M.
June 16		
June 18	.03	5.45 A.M. to 2.30 P.M.
June 23	.05	6.15 P.M. to 9.50 P.M.
June 26	.55	2.45 P.M. to 12.30 A.M.
June 27		
Total	1.57	
July 6	.03	9.30 A.M. to Midnight
July 14	.22	3.45 A.M. to 9.30 A.M.
July 15	.68	8.45 P.M. to 12.30 P.M.
July 16		
July 18	.19	6.00 P.M. to 10.45 P.M.
July 22	1.47	10.50 P.M. to 2.00 P.M.
July 24		
July 29	1.62	10.30 A.M. to 8.30 A.M.
July 30		
Total	4.21	
August 2	.20	12 noon to 1.10 P.M.
August 3	.09	5.20 P.M. to 8.15 P.M.
August 7	1.36	3.40 P.M. to 1.00 A.M.
August 8		
August 11	.11	10.15 A.M. to 11.25 A.M.
August 12	.48	4.40 P.M. to 7.30 A.M.
August 13		
August 14	.09	2.45 A.M. to 3.05 A.M.
August 14	.05	12.15 P.M. to 10.00 P.M.
August 16	1.34	3.45 P.M. to 2.30 A.M.
August 17		
August 24	.05	11.00 A.M. to 6.45 P.M.
August 25	.03	11.15 P.M. to 10.30 A.M.
August 26		
Total	3.80	
Sept. 2	.01	9.30 A.M. to 11.45 A.M.
Sept. 5	.16	4.40 A.M. to 6.00 P.M.
Sept. 6	.09	6.00 A.M. to 7.00 P.M.
Sept. 13	.02	12.30 A.M. to 5.30 A.M.
Sept. 17	.05	2.20 A.M. to 12.45 P.M.
Sept. 23	.51	9.15 P.M. to 12 noon
Sept. 24		
Sept. 25	.31	11.00 P.M. to 7.00 A.M.
Sept. 26		
Sept. 28	.01	3.00 A.M. to 4.00 A.M.
Total	1.16	
Oct. 6	.22	11.00 A.M. to 12.45 P.M.
Oct. 13	.51	7.00 P.M. to 11.00 P.M.
Oct. 17	.13	10.00 A.M. to 5.45 P.M.
Oct. 19	.03	4.00 A.M. to 6.30 A.M.
Oct. 20	.85	12.20 P.M. to 10.45 A.M.
Oct. 21		
Oct. 24	1.62	10.20 A.M. to 1.45 P.M.
Oct. 25		
Oct. 31	.41	1.00 P.M. to 10.45 P.M.
Total	3.77	
Nov. 2	.08	12.50 P.M. to 4.00 P.M.
Nov. 5	.02	9.00 A.M. to 4.00 P.M.
Nov. 9	1.26	2.00 A.M. to 5.15 A.M.
Nov. 10		
Nov. 14	.02	7.00 P.M. to 11.00 P.M.
Nov. 16	.27	5.10 P.M. to 11.45 P.M.
Nov. 18	1.79	7.30 P.M. to 7.30 A.M.
Nov. 19		
Nov. 26	.57	2.50 P.M. to 3.30 A.M.
Nov. 27		
Nov. 30	.50	4.30 A.M. to 9.30 P.M.
Total	4.51	

Total for year, 39.82 inches.

[1] Snow. [2] Rain and Snow.

TABLE No. 2—*Rainfall in inches at Chestnut Hill Reservoir, 1926*—Continued

DATE	Amount	Duration	DATE	Amount	Duration
Dec. 3	.13[1]	8.30 P.M. to 11.30 P.M.			
Dec. 5	1.02[1]	9.00 A.M. to			
Dec. 6		7.15 A.M.			
Dec. 10	.20[1]	5.45 A.M. to 5.30 P.M.			
Dec. 14	.02	4.45 A.M. to 7.00 A.M.			
Dec. 15	.10[1]	3.00 P.M. to 9.30 P.M.			
Dec. 20	.03[1]	7.00 A.M. to 11.45 A.M			
Dec. 24	.14	4.35 P.M. to 9.30 P.M.			
Dec. 26	.66[1]	4.30 A.M. to 3.40 P.M.			
Dec. 28	1.42[1]	8.00 A.M. to			
Dec. 29		1.30 A.M.			
Dec. 31	.07	9.00 P.M. to			
Jan. 1		3.00 A.M.			
Total	3.79				

Total for year 39.82 inches.

[1] Snow. [2] Rain and Snow.

TABLE No. 3—*Wachusett System—Statistics of Flow of Water, Storage and Rainfall in 1926*

[Watershed above dam = 108.84 square miles]

Month	Gallons per Day										Rainfall (Inches)	Rainfall Collected (Inches)	Percentage of Rainfall Collected
	Taken by Town of Clinton	Taken by City of Worcester	Received from City of Worcester Watershed	Discharged into Wachusett Aqueduct[1]	Wasted into River below Dam	Seepage through the North Dike[2]	Storage[3]		Total Yield of Watershed	Yield per Square Mile			
							Gain	Loss					
January	206,000	–	–	119,216,000	1,697,000	668,000	–	18,335,000	103,452,000	951,000	2.64	1.695	64.1
February	43,000	–	–	63,814,000	1,732,000	675,000	24,229,000	–	90,493,000	831,000	5.77	1.340	23.2
March	39,000	–	–	55,252,000	1,739,000	693,000	147,680,000	–	205,403,000	1,887,000	2.92	3.366	115.1
April	–	–	–	76,907,000	1,719,000	774,000	183,542,000	–	262,942,000	2,416,000	2.46	4.165	169.4
May	–	–	–	90,794,000	1,719,000	800,000	–	3,568,000	89,745,000	825,000	2.00	1.471	73.6
June	340,000	–	–	153,473,000	1,707,000	790,000	–	112,220,000	44,090,000	405,000	2.05	0.699	34.2
July	358,000	–	–	173,842,000	1,729,000	732,000	–	148,535,000	28,126,000	258,000	2.93	0.461	15.7
August	319,000	–	–	130,139,000	1,668,000	690,000	–	105,390,000	27,426,000	252,000	2.90	0.449	15.5
September	609,000	–	–	144,905,000	1,734,000	659,000	–	126,064,000	21,843,000	201,000	1.43	0.347	24.2
October	987,000	4,610,000	–	126,810,000	1,745,000	600,000	–	92,587,000	42,165,000	387,000	4.69	0.691	14.7
November	593,000	3,857,000	–	91,277,000	1,733,000	600,000	–	2,733,000	95,327,000	876,000	5.32	1.512	28.4
December	248,000	–	–	105,974,000	1,681,000	600,000	–	3,760,000	70,903,000	651,000	4.20	1.162	27.7
Total	–	–	–	–	–	–	–	–	–	–	39.31	17.358	–
Av. for Yr.	313,000	709,000	–	111,368,000	1,717,000	690,000	–	24,842,000	89,955,000	826,000	–	–	44.2

[1] Including 221,000 gallons per day drawn from aqueduct for the supply of the Westborough State Hospital.
[2] Estimated.
[3] Aggregate storage in Wachusett Reservoir and in ponds and mill reservoirs.

TABLE No. 4 — *Sudbury System — Statistics of Flow of Water, Storage and Rainfall in 1926*

[Watershed = 75.2 square miles]

Month	Gallons per Day										Rainfall (Inches)	Rainfall Collected (Inches)	Percentage of Rainfall Collected
	Water received from Wachusett Reservoir[1]	Water discharged through Sudbury Aqueduct	Water discharged through Weston Aqueduct	Water used by Framingham Water Works	Water diverted from Watershed by Sewers, etc.	Water wasted into River below Lowest Dam	Storage		Total Yield of Watershed	Yield per Square Mile			
							Gain	Loss					
January	119,035,000	59,100,000	70,961,000	1,703,000	1,007,000	41,106,000	10,058,000	–	64,900,000	863,000	3.00	1.539	51.2
February	63,593,000	45,085,000	83,025,000	1,732,000	1,018,000	75,011,000	–	67,757,000	74,521,000	991,000	5.92	1.596	27.0
March	55,042,000	23,584,000	99,142,000	1,694,000	2,242,000	117,803,000	13,561,000	–	204,984,000	2,726,000	3.23	4.863	150.6
April	76,697,000	18,202,000	96,564,000	1,405,000	2,470,000	82,865,000	19,387,000	–	144,924,000	1,927,000	2.21	3.323	150.5
May	90,578,000	23,981,000	97,629,000	1,290,000	1,181,000	89,097,000	–	18,655,000	54,132,000	720,000	2.29	1.284	56.1
June	153,240,000	36,163,000	95,170,000	1,320,000	607,000	8,120,000	19,670,000	–	7,810,000	104,000	1.60	0.179	11.2
July	173,587,000	30,939,000	97,384,000	1,323,000	487,000	1,635,000	36,690,000	–	–5,129,000	–68,000	3.18	–0.122	–3.8
August	129,894,000	22,455,000	100,326,000	1,184,000	771,000	11,548,000	10,939,000	–	17,490,000	233,000	5.51	0.415	7.5
September	144,666,000	34,079,000	95,820,000	1,265,000	616,000	1,501,000	2,870,000	–	–8,515,000	–113,000	1.40	–0.196	–14.0
October	126,571,000	30,481,000	94,045,000	1,197,000	519,000	6,703,000	2,165,000	–	8,539,000	114,000	3.77	0.203	5.4
November	91,050,000	23,400,000	100,740,000	1,180,000	926,000	35,177,000	–	10,513,000	60,370,000	803,000	5.27	1.386	26.3
December	105,758,000	35,890,000	101,223,000	1,319,000	1,036,000	31,252,000	–	15,184,000	50,381,000	670,000	4.03	1.195	29.7
Total	–	–	–	–	–	–	–	–	–	–	41.41	15.665	–
Av. for Year	111,144,000	31,884,000	94,399,000	1,382,000	1,073,000	37,398,000	743,000	–	56,088,000	746,000	–	–	37.8

[1]Not including 221,000 gallons per day drawn from the Wachusett Aqueduct for the supply of the Westborough State Hospital, which were not discharged into Sudbury Reservoir.

TABLE No. 5.—*Cochituate System—Statistics of Flow of Water, Storage and Rainfall in 1926*

[Watershed of lake = 17.58 square miles[1]]

Month	Gallons per Day							Rainfall (Inches)	Rainfall Collected (Inches)	Percentage of Rainfall Collected
	Water discharged through Cochituate Aqueduct	Water diverted from Watershed by Sewers, etc.	Water wasted at Outlet of Lake	Storage		Total Yield of Watershed	Yield per Square Mile			
				Gain	Loss					
January	–	703,000	14,584,000	–	152,000	15,135,000	861,000	3.11	1.54	49.4
February	–	661,000	45,975,000	–	18,672,000	27,964,000	1,591,000	5.64	2.56	45.4
March	–	1,429,000	28,065,000	17,464,000	–	46,958,000	2,671,000	3.51	4.77	135.8
April	–	1,569,000	22,755,000	4,446,000	–	28,770,000	1,637,000	2.36	2.82	119.6
May	–	951,000	12,252,000	681,000	–	13,884,000	790,000	2.58	1.41	54.6
June	–	593,000	1,994,000	1,100,000	–	3,687,000	210,000	1.59	0.36	22.8
July	–	419,000	–	762,000	–	1,881,000	67,000	3.42	0.12	35.0
August	–	635,000	3,968,000	3,513,000	–	8,116,000	462,000	4.59	0.82	17.9
September	–	339,000	–	–	396,000	–57,000	–3,000	1.32	–0.01	– 0.4
October	–	332,000	2,271,000	1,687,000	–	4,290,000	244,000	3.94	0.44	11.1
November	–	740,000	14,056,000	–	633,000	14,163,000	806,000	4.50	1.39	30.9
December	–	694,000	16,997,000	–	4,281,000	13,410,000	763,000	3.85	1.36	35.4
Total	–	–	–	–	–	–	–	40.41	17.58	–
Average for year	–	755,000	13,350,000	610,000	–	14,715,000	837,000	–		43.7

[1] Not including the watersheds of Dudley and Dug ponds.

TABLE No. 6.— *Sources from which and Periods during which Water has been drawn for the Supply of the Metropolitan Water District*

From Wachusett Reservoir into the Wachusett Aqueduct

Month	Number of Days during which Water was Flowing	Actual Time		Million Gallons Drawn
		Hours	Minutes	
January	25	298	30	3,695.7
February	17	183	15	1,786.8
March	22	218	11	1,712.8
April	25	253	0	2,304.0
May	25	247	30	2,814.6
June	26	340	25	4,604.2
July	26	386	45	5,389.1
August	26	314	38	4,034.3
September	25	299	38	4,353.2
October	25	284	0	3,931.1
November	25	253	10	2,738.3
December	26	282	15	3,285.2
Totals	293	140.05 days		40,649.3

From Sudbury Reservoir through the Weston Aqueduct to Weston Reservoir

Month	Number of Days during which Water was Flowing	Actual Time		Million Gallons Drawn
		Hours	Minutes	
January	26	438	00	2,199.8
February	26	487	25	2,324.7
March	31	744	00	3,073.4
April	30	708	30	2,892.9
May	31	736	00	3,026.5
June	30	715	52	2,855.1
July	31	744	00	3,018.9
August	31	739	20	3,110.1
September	30	687	00	2,878.6
October	31	612	30	2,915.4
November	30	675	45	3,022.2
December	31	655	30	3,137.9
Totals	358	331 days		34,455.5

From Framingham Reservoir No. 3 through the Sudbury Aqueduct to Chestnut Hill Reservoir

Month	Number of Days during which Water was Flowing	Actual Time (Hours)	Million Gallons Drawn
January	31	744	1,832.1
February	28	672	1,262.4
March	31	744	731.1
April	30	719	545.3
May	31	744	743.4
June	30	720	1,084.9
July	31	744	959.1
August	31	744	696.1
September	30	721	1,023.8
October	31	744	944.9
November	30	720	702.0
December	31	742	412.6
Totals	365	8,758	11,637.7

TABLE No. 7. — *Average Daily Quantity of Water flowing through Aqueducts in 1926 by Months*[1]

Month	Wachusett Aqueduct into Sudbury Reservoir (Gallons)	Weston Aqueduct into Metropolitan District (Gallons)	Sudbury Aqueduct into Chestnut Hill Reservoir (Gallons)	Cochituate Aqueduct into Chestnut Hill Reservoir (Gallons)
January	119,035,000	70,961,000	59,100,000	—
February	63,593,000	83,025,000	45,085,000	—
March	55,042,000	99,142,000	23,584,000	—
April	76,697,000	96,564,000	18,202,000	—
May	90,578,000	97,629,000	23,981,000	—
June	153,240,000	95,170,000	36,163,000	—
July	173,587,000	97,384,000	30,939,000	—
August	129,894,000	100,326,000	22,455,000	—
September	144,666,000	95,820,000	34,079,000	—
October	126,571,000	94,045,000	30,481,000	—
November	91,050,000	100,740.000	23,400,000	—
December	105,758,000	101,223,000	35,890,000	—
Average	111,144,000	94,399,000	31,884,000	—

[1] Not including quantities wasted while cleaning and repairing aqueducts.

TABLE No. 8.— (*Meter Basis.*) *Average Daily Consumption of Water by Districts in the Cities and Towns supplied by the Metropolitan Water Works in 1926*

Month	Low Service	Southern High Service	Northern High Service	Southern Extra High Service	Northern Extra High Service	Total District Supplied	Estimated Population	Consumption per Inhabitant
	Portions of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford and Somerville	Quincy and Watertown and portions of Boston, Belmont and Milton	Melrose, Nahant, Revere, Stoneham, Swampscott, Winthrop and portions of Boston, Chelsea, Everett, Malden, Medford and Somerville	Portions of Boston and Milton	Lexington and portions of Arlington and Belmont			
January	76,467,500	44,615,700	10,641,900	1,230,100	1,077,200	134,032,400	1,316,840	102
February	75,289,200	45,048,700	10,394,000	1,141,000	1,048,700	132,921,600	1,318,380	101
March	71,826,100	43,630,400	10,488,500	1,023,600	1,067,700	128,036,300	1,319,920	97
April	68,165,800	42,423,900	10,426,300	970,900	1,093,200	123,080,100	1,321,460	93
May	68,406,700	42,996,800	10,938,800	1,115,600	1,236,100	124,694,000	1,323,000	94
June	70,248,000	44,198,900	11,748,600	1,349,600	1,511,300	129,056,400	1,324,540	97
July	71,812,100	45,513,000	12,652,900	1,582,400	1,711,600	133,272,000	1,326,080	101
August	70,478,500	45,243,300	11,600,600	1,195,700	1,301,800	129,819,900	1,327,620	98
September	71,590,600	46,160,300	11,645,600	1,268,600	1,547,700	132,212,800	1,329,160	99
October	71,421,700	45,696,700	10,835,500	1,206,000	1,320,300	130,480,200	1,330,700	98
November	71,222,700	44,488,600	10,522,400	1,199,000	1,273,200	128,705,900	1,332,240	97
December	76,877,000	46,238,500	10,779,400	1,171,000	1,148,400	136,214,300	1,333,780	102
For the year	71,975,200	44,688,900	11,061,200	1,205,100	1,279,100	130,209,500	1,326,080	98

TABLE No 9.—(*Meter Basis.*) *Average Daily Consumption of Water in Cities and Towns supplied by the Metropolitan Water Works in 1926*

City or town	Arlington		Belmont		Boston		Chelsea		Everett		Lexington		Malden	
Population	26,090		16,080		789,500		47,950		42,440		8,040		52,340	
Month	Gallons		Gallons		Gallons		Gallons		Gallons		Gallons		Gallons	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	1,385,700	54	990,400	63	95,661,500	122	3,633,100	76	5,795,200	137	447,400	56	2,890,800	55
February	1,351,400	53	1,038,500	66	95,410,000	121	3,551,800	74	5,218,300	123	433,800	54	2,882,300	55
March	1,328,800	51	1,076,500	68	90,832,100	115	3,586,600	75	4,982,900	118	437,200	55	2,997,900	57
April	1,352,200	52	1,093,500	69	86,808,900	110	3,355,100	70	4,766,300	113	435,600	55	2,941,100	56
May	1,468,500	57	1,207,700	76	87,228,400	111	3,191,900	67	4,918,700	116	496,500	62	2,954,800	57
June	1,805,500	69	1,375,100	86	88,606,000	112	3,358,900	70	4,993,400	118	585,800	73	3,127,100	60
July	1,955,400	75	1,262,400	79	90,709,200	115	3,529,400	74	5,020,800	118	717,400	89	3,427,200	65
August	1,456,500	56	899,100	56	90,772,300	115	3,488,300	73	4,946,500	116	552,700	69	3,249,600	62
September	1,792,200	68	1,073,600	66	91,581,600	116	3,483,400	73	5,381,000	127	592,800	73	3,335,200	64
October	1,542,300	59	961,400	59	91,408,700	115	3,396,000	71	5,425,400	128	523,700	65	3,283,800	63
November	1,499,100	57	863,800	53	90,003,700	114	3,451,400	72	5,478,000	129	510,500	63	3,216,100	61
December	1,406,100	53	844,500	52	96,424,300	122	3,666,800	76	5,656,600	133	463,900	57	3,348,400	64
For the Year	1,529,200	59	1,056,900	66	91,275,700	116	3,474,400	72	5,215,900	123	516,900	64	3,139,800	60

TABLE No. 9.— *Average Daily Consumption of Water in Cities and Towns, etc.*— Continued

City or town	Medford		Melrose		Milton		Nahant		Quincy		Revere	
Population	49,430		20,610		13,420		1,670		62,510		34,240	
Month	Gallons		Gallons		Gallons		Gallons		Gallons		Gallons	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	2,573,400	53	1,230,900	60	624,400	47	97,000	58	4,488,300	73	2,169,100	64
February	2,319,800	47	1,238,000	61	622,500	47	91,900	55	4,664,700	76	2,169,800	64
March	2,527,400	52	1,274,300	62	636,800	48	92,900	56	4,709,500	76	2,113,800	62
April	2,355,500	48	1,356,100	66	659,300	49	89,600	54	4,540,400	73	2,007,300	59
May	2,412,300	49	1,341,100	65	752,200	56	158,900	95	4,759,800	77	2,215,500	65
June	2,512,300	51	1,471,400	71	851,400	64	272,100	163	4,860,900	78	2,378,500	70
July	2,693,000	54	1,564,800	76	791,200	59	367,800	220	5,079,100	81	2,659,000	78
August	2,433,700	49	1,341,300	65	629,100	47	314,400	188	4,854,600	77	2,568,600	75
September	2,608,600	53	1,484,600	72	720,700	53	260,800	155	4,915,400	78	2,459,200	72
October	2,572,100	52	1,393,200	67	726,900	54	161,000	96	4,794,700	76	2,178,400	63
November	2,599,300	52	1,378,100	67	717,200	53	107,700	64	4,642,800	74	2,029,900	59
December	2,640,900	53	1,473,400	71	684,000	50	116,400	69	4,763,400	75	2,201,800	64
For the Year	2,522,400	51	1,379,600	67	701,600	52	178,200	107	4,757,000	76	2,263,800	66

TABLE No. 9.—*Average Daily Consumption of Water in Cities and Towns, etc.*—Concluded

City or town	Somerville		Stoneham		Swampscott		Watertown		Winthrop		Metropolitan District	
Population	100,460		9,310		9,110		26,330		16,550		1,326,080	
Month	Gallons		Gallons		Gallons		Gallons		Gallons		Gallons	
	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita	Per Day	Per Capita
January	8,216,200	82	589,000	64	582,700	64	1,724,400	66	932,900	57	134,032,400	102
February	8,063,000	81	600,300	65	536,000	59	1,776,200	68	953,300	58	132,921,600	101
March	7,460,800	75	606,500	65	630,600	70	1,757,900	67	983,800	60	128,036,300	97
April	7,412,200	74	583,200	63	695,700	77	1,728,600	66	899,500	55	123,080,100	93
May	7,324,800	73	596,200	64	832,300	92	1,857,400	71	977,000	59	124,694,000	94
June	8,117,600	81	585,800	63	875,100	96	2,153,500	82	1,126,000	68	129,056,400	97
July	8,060,500	80	570,700	61	1,018,400	112	2,488,200	95	1,357,500	82	133,272,000	101
August	7,396,800	74	510,700	55	865,200	95	2,234,500	85	1,306,000	79	129,819,900	98
September	7,773,500	77	537,500	58	834,400	91	2,212,800	84	1,165,500	70	132,212,800	99
October	7,711,000	77	512,500	55	662,100	72	2,189,900	83	1,037,100	62	130,480,200	98
November	7,881,600	78	503,300	54	560,400	61	2,226,800	84	1,036,200	62	128,705,900	97
December	8,100,600	80	527,500	56	541,500	59	2,337,000	88	1,017,200	61	136,214,300	102
For the Year	7,791,000	78	560,000	60	720,800	78	2,059,300	78	1,067,000	64	130,209,500	98

TABLE No. 10.— *Chemical Examinations of Water from the Wachusett Reservoir, Clinton.* [Parts per 100,000]

Date of Collection	Appearance		Odor		Residue on Evaporation		Ammonia				Chlorine	Hardness
								Albuminoid				
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	Total	Dissolved	Suspended		
Jan. 5	V. slight	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.85	1.55	.0044	.0184	.0150	.0034	.31	1.6
Jan. 19	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.70	1.35	.0016	.0106	.0088	.0018	.28	1.4
Feb. 2	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.85	1.55	.0022	.0102	.0068	.0034	.28	1.3
Feb. 16	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.00	1.75	.0042	.0118	.0102	.0016	.28	1.3
Mar. 9	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.80	1.50	.0038	.0116	.0096	.0020	.28	1.6
Mar. 23	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.65	1.45	.0028	.0142	.0092	.0050	.26	1.6
Apr. 6	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.85	1.65	.0042	.0122	.0090	.0032	.33	1.4
Apr. 20	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.20	1.35	.0028	.0126	.0078	.0048	.27	1.3
May 5	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.10	1.85	.0026	.0156	.0110	.0046	.27	1.3
May 18	None.	V. slight.	Faintly vegetable.	Distinctly vegetable.	3.75	1.50	.0010	.0106	.0084	.0022	.27	1.3
June 8	V. slight.	V. slight.	Faintly vegetable.	Distinctly vegetable.	3.20	1.00	.0014	.0098	.0078	.0020	.29	1.3
June 22	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	4.00	1.50	.0034	.0072	.0054	.0018	.28	1.3
July 8	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	3.75	1.15	.0008	.0126	.0114	.0012	.28	1.3
July 27	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.75	1.15	.0004	.0074	.0066	.0008	.29	1.1
Aug. 3	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.20	1.10	.0016	.0134	.0106	.0028	.30	1.1
Aug. 18	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	4.00	1.55	.0006	.0134	.0092	.0042	.32	1.1
Sept. 7	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.05	1.50	.0006	.0114	.0090	.0024	.25	1.3
Sept. 21	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.50	1.80	.0010	.0112	.0102	.0010	.24	1.4
Oct. 5	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	4.30	1.70	.0006	.0078	.0076	.0002	.26	1.3
Oct. 19	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	3.75	1.15	.0026	.0098	.0088	.0010	.26	1.3
Nov. 2	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.65	1.20	.0018	.0098	.0084	.0014	.28	1.4
Nov. 16	V. slight.	Slight.	V. faintly vegetable.	Faintly vegetable.	3.65	1.20	.0032	.0100	.0074	.0026	.28	1.4
Dec. 7	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.50	1.65	.0002	.0098	.0080	.0018	.30	1.3
Dec. 21	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.00	1.40	.0004	.0100	.0090	.0010	.29	1.4
Av.	.....	.....	.....	.....	3.79	1.44	.0020	.0113	.0090	.0023	.27	1.4

TABLE No. 11.—*Chemical Examinations of Water from the Sudbury Reservoir.* [Parts per 100,000]

Date of Collection	Appearance		Odor		Residue on Evaporation		Ammonia				Chlorine	Hardness
								Albuminoid				
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	Total	Dissolved	Suspended		
Jan. 5	V. slight.	V. slight.	V. faintly unpl. and fishy.	Faintly unpl. and fishy.	4.30	1.90	.0018	.0162	.0146	.0016	.35	1.8
Feb. 2	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	3.25	1.45	.0020	.0166	.0116	.0050	.31	1.7
Mar. 9	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.60	1.35	.0030	.0094	.0088	.0006	.29	1.4
Apr. 6	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.00	1.60	.0034	.0130	.0100	.0030	.32	1.8
May 4	V. slight.	Slight.	V. faintly vegetable.	Faintly vegetable.	4.10	1.50	.0024	.0136	.0110	.0026	.31	1.4
June 8	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.40	1.60	.0046	.0100	.0090	.0010	.31	1.4
July 13	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.00	1.75	.0006	.0130	.0122	.0008	.32	1.1
Aug. 3	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	5.80	1.55	.0050	.0112	.0102	.0010	.28	1.4
Sept. 7	V. slight.	Slight.	V. faintly vegetable.	Faintly vegetable.	4.15	1.40	.0032	.0144	.0120	.0024	.32	1.4
Oct. 5	V. slight.	V. slight.	Faintly vegetable.	Distinctly vegetable.	3.50	1.50	.0006	.0106	.0094	.0012	.28	1.3
Nov. 2	V. slight.	V. slight.	Faintly vegetable.	Distinctly vegetable.	4.10	1.45	.0020	.0108	.0096	.0012	.28	1.3
Dec. 7	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.90	1.10	.0018	.0104	.0092	.0012	.29	1.6
Av.	.....	.....	.....	.....	4.09	1.51	.0025	.0124	.0106	.0018	.30	1.5

TABLE No. 12.—*Chemical Examinations of Water from Spot Pond, Stoneham.* [Parts per 100,000]

Jan. 4	V. slight.	V. slight.	Faintly vegetable.	Distinctly vegetable.	4.00	1.60	.0008	.0166	.0114	.0052	.32	2.0
Feb. 1	V. slight.	V. slight.	V. faintly veg. and unpl.	Faintly veg. and unpl.	4.30	1.85	.0020	.0110	.0088	.0022	.37	1.6
Mar. 8	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	3.85	1.55	.0066	.0180	.0146	.0034	.40	1.7
Apr. 5	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.00	1.60	.0066	.0178	.0124	.0054	.38	1.7
May 3	V. slight.	Slight.	V. faintly vegetable.	V. faintly vegetable.	4.10	1.70	.0012	.0114	.0100	.0014	.34	1.4
June 7	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	3.75	1.35	.0050	.0134	.0128	.0006	.36	1.6
July 12	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.55	1.10	.0008	.0136	.0118	.0018	.36	1.4
Aug. 2	None.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.40	1.85	.0056	.0140	.0132	.0008	.36	1.3
Sept. 7	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	3.85	1.30	.0008	.0132	.0110	.0022	.36	1.6
Oct. 4	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.90	2.00	.0010	.0120	.0104	.0016	.32	1.3
Nov. 1	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.05	1.50	.0038	.0148	.0104	.0044	.31	1.6
Dec. 6	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.70	1.35	.0006	.0128	.0110	.0018	.30	1.4
Av.	.....	.....	.....	.....	4.04	1.56	.0029	.0141	.0115	.0026	.34	1.6

TABLE No. 13.—*Chemical Examinations of Water from Lake Cochituate.* [Parts per 100,000]

Date of Collection	Appearance		Odor		Residue on Evaporation		Ammonia				Chlorine	Hardness
								Albuminoid				
	Turbidity	Sediment	Cold	Hot	Total	Loss on Ignition	Free	Total	Dissolved	Suspended		
Jan. 6	V. slight.	V. slight.	Faintly vegetable and earthy.	Distinctly veg. and earthy.	7.40	2.40	.0042	.0206	.0174	.0032	.80	3.1
Feb. 3	V. slight.	V. slight.	Faintly vegetable and earthy.	Distinctly veg. and earthy.	7.40	2.30	.0042	.0168	.0110	.0058	.86	3.0
Mar. 10	V. slight.	Slight.	Faintly vegetable and earthy.	Distinctly veg. and earthy.	7.50	2.70	.0098	.0176	.0136	.0040	.80	2.9
Apr. 7	V. slight.	V. slight.	Faintly vegetable and earthy.	Distinctly veg. and earthy.	6.95	2.25	.0038	.0166	.0148	.0018	.74	2.9
Apr. 7	V. slight.	V. slight.	Faintly vegetable and earthy.	Distinctly veg. and earthy	6.80	2.50	.0052	.0180	.0148	.0032	.68	2.3
May 5	V. slight.	Slight.	Faintly vegetable and marshy.	Distinctly veg. and marshy.	7.60	2.15	.0014	.0214	.0178	.0036	.77	2.7
July 8	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	7.75	2.90	.0008	.0182	.0162	.0020	.80	2.9
Aug. 4	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	7.00	2.30	.0020	.0160	.0140	.0020	.82	2.9
Sept. 2	V. slight	V. slight	V. faintly veg. and earthy.	Faintly veg. and earthy.	6.85	1.65	.0006	.0156	.0124	.0032	.80	2.6
Oct. 6	V. slight.	Slight.	Faintly veg. and earthy.	Distinctly veg. and earthy.	6.65	2.25	.0006	.0154	.0140	.0014	.78	2.7
Nov. 3	V. slight.	Slight.	Faintly veg. and earthy.	Distinctly veg. and earthy.	9.00	2.60	.0022	.0176	.0114	.0062	.77	2.7
Dec. 8	V. slight.	V. slight.	Faintly veg. and earthy.	Distinctly veg. and earthy.	7.60	2.10	.0038	.0184	.0138	.0046	.80	3.0
Av.					7.38	2.34	.0032	.0177	.0143	.0034	.72	2.8

TABLE No. 14. —*Chemical Examinations of Water from a Tap at the State House, Boston.* [Parts per 100,000]

Jan. 4	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	4.40	1.90	.0008	.0146	.0110	.0036	.30	2.1
Feb. 3	V. slight.	Slight.	V. faintly veg. and unpl.	Faintly veg. and unpleasant.	4.20	1.90	.0020	.0110	.0090	.0020	.37	1.6
Mar. 10	None.	None.	V. faintly vegetable.	Faintly vegetable.	4.55	1.85	.0028	.0116	.0090	.0026	.34	2.0
Apr. 8	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	4.65	1.85	.0024	.0110	.0080	.0030	.37	1.8
May 4	V. slight.	Slight.	V. faintly vegetable.	Faintly vegetable.	4.15	1.65	.0012	.0126	.0088	.0038	.34	1.6
June 7	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	4.25	1.75	.0030	.0132	.0104	.0028	.34	1.4
July 7	V. slight.	Slight.	V. faintly vegetable.	Faintly vegetable.	4.05	1.80	.0024	.0144	.0104	.0040	.30	1.1
Aug. 2	None.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	4.20	1.75	.0006	.0104	.0096	.0008	.29	1.1
Sept. 7	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.75	1.50	.0006	.0108	.0094	.0014	.32	1.1
Oct. 4	V. slight.	V. slight.	V. faintly vegetable.	V. faintly vegetable.	4.65	1.85	.0002	.0096	.0090	.0006	.28	1.3
Nov. 3	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.40	1.10	.0012	.0116	.0088	.0028	.27	1.4
Dec. 6	V. slight.	V. slight.	V. faintly vegetable.	Faintly vegetable.	3.85	1.30	.0004	.0080	.0078	.0002	.28	1.6
Av.					4.18	1.68	.0015	.0115	.0092	.0023	.32	1.5

TABLE No. 15.—*Chemical Examinations of Water from a Faucet in Boston, 1898-1926.*
[Parts per 100,000]

Year	Color	Residue on Evaporation		Ammonia				Chlorine	Oxygen Consumed	Hardness
					Albuminoid					
	Platinum Standard	Total	Loss on Ignition	Free	Total	Dissolved	Suspended			
1898	.40	4.19	1.60	.0008	.0152	.0136	.0016	.29	.44	1.4
1899	.28	3.70	1.30	.0006	.0136	.0122	.0014	.24	.35	1.1
1900	.29	3.80	1.20	.0012	.0157	.0139	.0018	.25	.38	1.3
1901	.29	4.43	1.64	.0013	.0158	.0142	.0016	.30	.42	1.7
1902	.30	3.93	1.56	.0016	.0139	.0119	.0020	.29	.40	1.3
1903	.29	3.98	1.50	.0013	.0125	.0110	.0015	.30	.39	1.5
1904	.23	3.93	1.59	.0023	.0139	.0121	.0018	.34	.37	1.5
1905	.24	3.86	1.59	.0020	.0145	.0124	.0021	.35	.35	1.4
1906	.24	3.86	1.39	.0018	.0159	.0134	.0025	.34	.36	1.3
1907	.22	3.83	1.40	.0013	.0129	.0109	.0020	.33	.32	1.3
1908	.19	3.50	1.35	.0011	.0115	.0092	.0024	.33	.26	1.2
1909	.18	3.46	1.43	.0011	.0128	.0103	.0025	.28	.25	1.3
1910	.14	3.05	1.24	.0013	.0118	.0102	.0016	.28	.22	1.1
1911	.25	4.18	1.66	.0015	.0156	.0128	.0029	.38	.33	1.4
1912	.17	3.86	1.23	.0018	.0154	.0119	.0034	.36	.29	1.7
1913	.13	3.96	1.15	.0014	.0150	.0120	.0026	.35	.26	1.5
1914	.14	4.12	1.19	.0014	.0138	.0116	.0022	.39	.25	1.4
1915	.16	3.73	1.04	.0015	.0157	.0134	.0023	.38	.25	1.4
1916	.18	4.53	1.85	.0013	.0133	.0107	.0026	.36	—	1.4
1917	.15	4.45	1.68	.0015	.0142	.0124	.0018	.33	—	1.3
1918	.18	3.89	1.45	.0019	.0154	.0128	.0026	.29	—	1.4
1919	.20	4.28	1.41	.0010	.0130	.0108	.0022	.36	—	1.5
1920	.17	4.23	1.35	.0012	.0112	.0097	.0014	.33	—	1.5
1921	.13	3.80	1.39	.0006	.0104	.0089	.0015	.25	—	1.4
1922	.16	3.98	1.55	.0011	.0097	.0080	.0017	.30	—	1.8
1923	.15	3.90	1.45	.0011	.0100	.0090	.0010	.26	—	1.5
1924	.12	4.10	1.60	.0011	.0109	.0084	.0025	.28	—	1.5
1925	.09	3.98	1.62	.0013	.0109	.0093	.0016	.29	—	1.5
1926	.10	4.18	1.68	.0015	.0115	.0092	.0023	.32	—	1.5

TABLE No. 16.— *Number of Bacteria per Cubic Centimeter in Water from Various Parts of the Metropolitan Water Works, 1898-1926. [Averages of Weekly Determinations]*

Year	Chestnut Hill Reservoir			Southern Service Taps	
	Sudbury Aqueduct Terminal Chamber	Cochituate Aqueduct	Effluent Gate-house No. 2	Low Service, 180 Boylston Street	High Service, 1 Ashburton Place
1898	207	145	111	96	—
1899	224	104	217	117	123
1900	248	113	256	188	181
1901	225	149	169	162	168
1902	203	168	121	164	246
1903	76	120	96	126	243
1904	347	172	220	176	355
1905	495	396	489	231	442
1906	231	145	246	154	261
1907	147	246	118	130	176
1908	162	138	137	136	148
1909	198	229	119	150	195
1910	216	—	180	178	213
1911	205	204	151	175	197
1912	429	450	227	249	259
1913	123	243	157	119	140
1914	288	—	252	174	220
1915	163	—	128	117	134
1916	128	—	85	102	105
1917	178	112	119	119	141
1918	1,163	168	705	317	544
1919	92	85	100	70	84
1920	148	86	108	113	112
1921	103	—	83	92	92
1922	163	—	153	160	172
1923	229	—	178	217	230
1924	137	—	96	150	160
1925	144	251	120	155	174
1926	167	—	118	130	137

TABLE No. 17.—*Colors of Water from Various Parts of the Metropolitan Water Works in 1926. (Averages of Weekly Determinations)*

[Platinum Standard]

Month	Wachusett Reservoir						Sudbury Reservoir				Framingham Reservoir No. 3	Lake Cochituate			Chestnut Hill Reservoir			Spot Pond	Fells Reservoir	Northern Service		Southern Service	
	Surface	Mid-depth	Bottom	Worcester St. Bridge	Quinapoxet River	Stillwater River	Surface	Mid-depth	Bottom	End of Open Channel	Mid-depth	Surface	Mid-depth	Bottom	Inlet (Sudbury Aqueduct)	Inlet (Cochituate Aqueduct)	Effluent Gate-house No. 2	Mid-depth	Effluent Gate-house	Tap at Glenwood Yard, Medford (Low Service)	Tap at Glenwood Yard Medford (High Service)	Tap at 180 Boylston Street, Boston (Low Service))	Tap at 1 Ashburton Place, Boston (High Service)
January	12	12	11	33	39	33	18	18	18	17	18	17	15	24	17	–	16	9	8	16	8	16	16
February	13	13	13	33	38	30	18	19	19	15	19	22	18	29	19	–	17	10	10	18	10	18	18
March	14	15	13	35	40	34	18	18	18	38	20	26	–	–	19	–	17	10	9	17	10	17	17
April	14	14	14	36	43	34	21	21	21	22	22	23	23	24	19	–	18	7	9	18	8	18	18
May	15	15	16	45	63	47	20	20	21	18	21	21	21	23	20	–	18	10	8	18	8	18	18
June	18	18	18	41	53	37	21	21	21	19	23	19	20	40	22	–	19	10	10	19	10	19	19
July	14	15	16	27	39	27	15	17	14	17	14	14	19	50	17	–	15	12	12	16	12	15	15
August	13	14	14	22	47	27	14	14	15	14	14	12	21	36	14	–	13	11	11	12	11	13	13
September	14	14	15	25	44	21	14	14	15	14	14	13	–	–	14	–	13	11	11	13	11	13	14
October	14	14	15	24	67	33	13	14	14	15	14	13	13	216	14	–	13	11	11	13	11	13	13
November	14	14	14	51	58	43	14	14	15	15	15	19	19	86	14	–	13	11	12	13	12	13	13
December	14	14	14	49	48	34	15	15	15	15	16	19	19	20	15	–	14	13	12	14	13	14	14
Mean	14	14	14	35	48	33	17	17	17	18	18	18	19	55	17	–	16	10	10	16	10	16	16

Table No. 18.— *Temperatures of Water from Various Parts of the Metropolitan Water Works in 1926. (Averages of Weekly Determinations)*

[The temperatures are taken at the same places and times as the samples for microscopital examination; the depth at place of observation is from high-water mark.]

[Degrees Fahrenheit.]

Month	Wachusett[1] Reservoir (Depth at Place of Observation 107 Feet)			Sudbury[1] Reservoir (Depth at Place of Observation 54.5 Feet)			Wachusett Aqueduct	Framingham[1] Reservoir No. 3 (Depth at Place of Observation 20.5 Feet)			Lake Cochituate[1] (Depth at Place of Observation 62.0 Feet)			Chestnut Hill Reservoir	Spot Pond[1] (Depth at Place of Observation 28.0 Feet)			Northern Service		Southern Service	
	Surface	Mid-depth	Bottom	Surface	Mid-depth	Bottom	End of Open Channel	Surface	Mid-depth	Bottom	Surface	Mid-depth	Bottom	Effluent Gate-house No. 2	Surface	Mid-depth	Bottom	Tap at Glenwood Yard, Medford (Low Service)	Tap at Glenwood Yard, Medford (High Service)	Tap at 180 Boylston Street, Boston (Low Service)	Tap at 1 Ashburton Place, Boston (High Service)
January	33.3	33.8	34.5	34 3	35.0	35.5	35.0	34.7	35.0	35.6	36.0	36.3	37.0	35.8	34.5	34.8	35.0	37.6	38.6	37.6	38.6
February	33.6	33.5	35.5	–	35.3	34.5	33.5	33.3	34.6	34.9	34.7	36.3	37.8	35.4	34.4	35.0	35.5	36.6	38.4	37.2	38.8
March	33.9	34.5	34.8	34.6	35.8	35.9	35.3	34.9	34.6	36.1	35.4	–	–	36.6	34.9	36.3	36.8	36.7	38.4	37.5	39.0
April	37.1	35.4	38.5	39.9	42.3	38.3	39.5	42.3	42.2	44.8	41.6	41.8	41.3	42.0	38.0	46.0	39.0	42.6	42.4	42.6	44.3
May	49.1	47.3	47.8	55.9	56.5	52.5	50.3	56.5	56.2	56.8	54.9	50.5	45.3	55.3	–	54.8	52.3	54.6	52.5	54.9	56.5
June	58.0	54.0	52.5	61.3	61.5	59.5	58.0	63.8	63.1	63.1	63.0	52.8	45.6	62.7	–	61.5	60.5	61.4	60.0	62.6	63.5
July	69.8	62.5	55.5	73.3	69.5	68.0	62.5	75.0	75.5	72.5	74.5	55.7	46.2	72.6	72.3	72.0	–	70.5	70.0	72.6	73.0
August	72.5	59.5	54.5	72.8	71.5	68.3	67.5	73.2	72.7	72.4	73.5	55.5	46.2	71.7	72.0	71.8	71.7	70.9	70.6	72.3	73.1
September	65.4	59.0	53.3	67.3	66.0	66.5	63.0	66.2	67.0	65.4	65.9	–	–	67.7	67.0	66.5	66.8	67.6	67.3	68.1	69.3
October	56.3	56.5	60.0	58.4	56.0	60.0	54.5	56.3	58.6	53.8	58.0	53.0	45.7	58.1	58.1	59.5	56.3	60.4	59.8	60.8	62.3
November	47.8	48.0	48.3	47.0	46.8	47.0	47.5	45.8	45.2	45.8	48.6	48.2	46.4	47.3	46.2	46.0	46.5	49.1	49.6	49.3	50.5
December	36.1	36.3	36.3	34.1	34.8	36.0	35.0	34.0	35.1	33.9	35.9	37.9	38.5	35.6	37.0	35.5	35.5	40.5	39.6	38.6	39.1
Mean	49.4	46.7	46.0	52.6	50.9	50.2	48.5	51.3	51.7	51.3	51.8	46.8	43.0	51.7	49.4	51.6	48.7	52.4	52.3	52.8	54.0

[1]Surface temperatures are averages of weekly determinations. Mid-depth and bottom temperatures are averages of biweekly determinations.

TABLE No. 19.—*Length of Metropolitan Water Works Main Lines and Connections and Number of Valves set in Same, Dec. 31, 1926.*

[Pipes are of cast iron unless otherwise noted.]

	Diameter of Pipes in Inches.																	Total
	60	56	48	42	40	38	36	30	24	20	16	14	12	10	8	6	4	
Total length owned and operated, Dec. 31, 1925 (feet)	80,513	17,569	215,537	9,810	6,887	4,766	63,712	51,520	96,056	100,007	74,479	26	29,276	3,853	1,900	1,282	46	757,239
Gate valves in same	12	–	57	1	3	–	61	46	67	63	100	1	124	22	21	25	1	604
Air valves in same	108	8	127	5	5	4	47	24	53	63	38	–	10	1	–	–	–	493
Length laid or relaid during 1926 (ft.)	824	–	40	–	–	2,508	66	7,330	27	2,384	1,901	–	1,034	6	–	–	–	16,120
Gate valves in same	–	–	–	–	–	–	1	1	1	2	8	–	5	–	–	–	–	18
Air valves in same	2	–	–	–	–	2	–	5	2	3	3	–	–	–	–	–	–	17
Length abandoned during 1926 (feet)	–	–	15	–	–	–	7	37	10	34	29	–	894	–	–	–	–	1,026
Gate valves in same	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Air valves in same	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1
Length owned and operated Dec. 31, 1926 (feet)	81,337[1]	17,569[2]	215,562	9,810	6,887	7,274[2]	63,771	58,813[3]	96,073	102,357[4]	76,351[5]	26	29,416[6]	3,859	1,900	1,282	46	772,333[7]
Gate valves in same	12	–	57	1	3	–	62	47	68	64	108	1	129	22	21	25	1	621
Air valves in same	110	8	127	5	5	6	47	29	55	66	40	–	10	1	–	–	–	509

[1] Includes 2,035 feet of 76-inch concrete-lined pressure tunnel; 363 feet of 76-inch mortar-lined and concrete-covered steel pipe; 21 feet of 76-inch cast-iron pipe; 85 feet of 60-inch concrete-covered steel pipe and 34,037 feet of 60-inch steel pipe.
[2] Steel pipe.
[3] Includes 15,512 feet of mortar-lined and covered wrought-iron pipe and 7,213 feet of cement-lined cast-iron pipe.
[4] Includes 1,319 feet of cement-lined cast-iron pipe.
[5] Includes 1,795 feet of cement-lined cast-iron pipe.
[6] Includes 627 feet of cement-lined cast-iron pipe.
[7] 146.28 miles.

TABLE No. 20.—*Length of Metropolitan Water Works Hydrant, Blow-off and Drain Pipes, Dec. 31, 1926.* [All pipes are of cast iron]

	Diameter of Pipes in Inches								Total
	24	20	16	12	10	8	6	4	
Total length in use Dec. 31, 1925 (feet)	352	292	3,530	6,964	176	545	4,065	1,569	17,493
Valves in same	–	–	43	114	2	9	98	46	312
Length laid or relaid in 1926 (feet)	–	–	43	38	44	526	105	79	835
Valves in same	–	–	1	–	–	3	1	3	8
Length abandoned in 1926 (feet)	–	–	–	12	–	–	10	8	30
Valves in same	–	–	–	–	–	–	–	1	1
Total length in use Dec. 31, 1926 (feet)	352	292	3,573	6,990	220	1,071	4,160	1,640	18,298[1]
Valves in same	–	–	44	114	2	12	99	48	319

[1] 3.47 miles.

TABLE No. 21. — *Length of Metropolitan Water Works Main Lines and Connections and Water Pipes, Four Inches in Diameter and Larger, in the Several Cities and Towns supplied by the Metropolitan Water Works, Dec. 31, 1926.*

By whom owned	Inches																			Totals	
	60	56	48	42	40	38	36	30	24	20	18	16	14	12	10	8	7	6	4	Feet	Miles
Metropolitan Water Works	81,337	17,569	215,562	9,810	6,887	7,274	63,771	58,813	96,073	102,357	–	76,351	26	29,416	3,859	1,900	–	1,282	46	772,333	146.28
Arlington	–	–	–	–	–	–	–	–	–	–	–	–	–	33,738	32,613	47,705	–	214,797	15,787	344,640	65.27
Belmont	–	–	–	–	–	–	–	–	–	–	–	–	–	9,714	23,943	42,091	–	166,004	269	242,021	45.84
Boston	–	–	17,784	15,980	16,081	–	43,644	91,819	81,414	86,520	–	288,110	5,041	1,605,097	444,538	955,031	–	1,128,826	85,357	4,865,242	921.45
Brookline	–	–	–	–	–	–	–	–	10,007	27,292	–	20,057	13,020	61,101	72,594	89,081	–	254,032	–	547,184	103.63
Chelsea	–	–	–	–	–	–	–	–	–	–	–	5,176	–	5,479	40,131	32,802	–	148,617	6,747	238,952	45.26
Everett	–	–	–	–	–	–	–	–	2,484	2,900	–	6,948	5,998	8,306	44,255	27,282	–	160,645	29,190	288,008	54.54
Lexington	–	–	–	–	–	–	–	–	–	–	–	–	–	9,701	5,011	36,670	–	163,263	27,890	242,535	45.93
Malden	–	–	–	–	–	–	–	–	–	–	–	8,891	11,118	89,822	32,544	100,827	–	233,638	50,201	527,041	99.82
Medford	–	–	–	–	–	–	–	–	–	673	–	6,775	9,598	39,539	42,980	113,615	–	218,066	26,881	458,127	86.76
Melrose	–	–	–	–	–	–	–	–	–	–	–	5,223	3,024	23,097	20,903	27,707	–	174,088	53,292	307,334	58.21
Milton	–	–	–	–	–	–	–	–	–	–	–	3,415	44	27,614	24,024	71,067	–	205,479	16,287	347,930	65.89
Nahant	–	–	–	–	–	–	–	–	–	–	–	–	10,444	4,350	11,550	6,096	–	37,292	57,668	127,400	24.13
Newton	–	–	–	–	–	–	–	–	981	39,581	–	3,070	–	85,413	7,099	171,474	–	574,144	62,349	944,111	178.81
Quincy	–	–	–	–	–	–	–	–	–	15,450	–	32,123	–	75,343	71,639	191,628	994	423,779	80,183	891,139	168.78
Revere	–	–	–	–	–	–	–	–	–	–	–	10,600	5,785	30,115	30,076	46,769	–	141,222	67,374	331,941	62.87
Somerville	–	–	–	–	–	–	–	–	–	5,577	367	8,052	7,950	104,432	67,651	113,219	–	214,865	21,404	543,517	102.94
Stoneham	–	–	–	–	–	–	–	–	–	–	–	–	–	9,075	175	5,110	–	116,618	19,887	150,865	28.57
Swampscott	–	–	–	–	–	–	–	–	–	–	–	–	3,721	6,714	20,103	6,620	–	108,120	8,121	153,399	29.05
Watertown	–	–	–	–	–	–	–	–	–	–	–	2,991	11,262	6,264	27,046	42,904	–	156,737	8,022	255,226	48.34
Winthrop	–	–	–	–	–	–	–	–	–	–	–	–	–	4,049	24,198	46,313	–	57,679	46,419	178,658	33.84
Total feet	81,337	17,569	233,346	25,790	22,968	7,274	107,415	150,632	190,959	280,350	367	477,782	87,031	2,268,379	1,046,932	2,175,911	994	4,899,193	683,374	12,757,603	–
Total miles	15.40	3.33	44.19	4.88	4.35	1.38	20.34	28.53	36.17	53.10	0.07	90.49	16.48	429.62	198.28	412.10	0.19	927.88	129.43	–	2,416.21

TABLE NO. 22.— *Number of Service Pipes, Meters, Per Cent of Services Metered, Fire Services and Fire Hydrants in the Several Cities and Towns in the Metropolitan Water District December 31, 1926*

CITY OR TOWN	Services	Meters	Per Cent of Services Metered	Services Used for Fire Purposes Only	Fire Hydrants
Arlington	5,410	5,410	100.00	23	671
Belmont	3,463	3,463	100.00	8	386
Boston	94,467	91,594	96.96	2,883	11,306
Chelsea	5,617	5,612	99.91	120	425
Everett	6,792	6,403	94.27	45	583
Lexington	2,065	2,058	99.66	8	307
Malden	8,946	8,914	99.64	70	669
Medford	8,863	8,863	100.00	23	869
Melrose	5,166	5,166	100.00	22	419
Milton	3,373	3,373	100.00	3	515
Nahant	845	680	80.47	2	121
Quincy	14,650	13,719	93.65	27	1,542
Revere	5,959	5,283	88.66	7	370
Somerville	13,732	13,732	100.00	71	1,322
Stoneham	2,017	2,017	100.00	4	171
Swampscott	2,406	2,406	100.00	8	254
Watertown	5,177	5,177	100.00	35	543
Winthrop	3,389	3,389	100.00	5	354
Dist. Supplied	192,337	187,259	97.36	3,364	20,827
Brookline	7,031	7,031	100.00	28	857
Newton	12,074	12,013	99.49	62	1,280
Total District	211,442	206,303	97.57	3,454	22,964

TABLE No. 23.—*Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base for Each Month at Stations on Metropolitan Water Works during 1926.*

1926 Month	Low Service												Southern High Service					
	Boston, Engine House, Bulfinch Street		Allston, Engine House, Harvard Street		Medford, Near Mystic Reservoir		Somerville Public Library, Highland Avenue		Malden Water Works Shop, Green Street		Chelsea Court House		Boston Metropolitan Water Works Office, 1 Ashburton Place		Watertown Water Works, Office, Main Street		Belmont Water Works Shop, Waverley Street	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
January	153	137	190	178	172	161	172	158	167	158	166	144	248	221	261	219	213	186
February	150	137	189	176	171	160	166	155	167	158	167	146	248	221	261	220	201	175
March	157	137	184	178	172	159	166	153	166	153	166	143	248	221	261	210	198	169
April	158	134	190	163	175	160	174	153	167	153	160	140	248	222	261	212	213	174
May	157	144	182	161	173	158	165	151	166	152	155	142	248	221	261	203	238	171
June	156	144	184	168	174	161	168	157	167	158	162	143	248	221	261	187	245	162
July	158	144	179	163	175	162	166	153	166	156	160	137	248	220	274	177	252	160
August	155	144	184	164	174	165	165	153	166	152	165	142	246	220	274	237	254	174
September	156	144	186	163	175	164	167	153	164	150	162	142	245	217	274	235	261	175
October	155	144	186	164	179	161	176	153	160	146	160	137	248	217	277	237	261	178
November	153	125	186	164	177	158	176	153	163	144	160	131	248	220	277	237	264	169
December	147	134	179	163	172	161	167	153	163	152	158	139	248	220	277	237	257	171
Averages	155	139	185	167	174	161	169	154	165	153	162	141	248	220	268	218	238	172

TABLE No. 23.—*Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base, etc.*—Concluded

1926 Month	Southern High Service — Concluded						Northern High Service										Northern Extra High Service	
	Milton Water Works Office, Adams Street		Forbes Hill Tower, Quincy		Quincy Water Works Shop		Somerville Water Works Shop		Malden City Hall		Revere Water Works Shop, Broadway		Lynn Engine House, Union Square		Winthrop Town Hall, Herman Street		Lexington Town Hall, Massachusetts Avenue	
	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
January	248	227	242	225	239	198	268	243	269	260	265	239	263	224	201	175	434	414
February	247	227	242	225	235	198	268	243	269	262	262	247	263	240	199	175	434	416
March	247	227	242	223	238	198	268	254	268	260	265	244	263	233	201	173	432	415
April	248	227	242	223	239	196	268	236	269	260	265	246	263	231	201	175	434	409
May	248	221	242	220	237	192	268	226	269	262	265	235	257	215	199	173	434	402
June	245	214	241	212	237	168	268	237	269	253	260	216	257	180	201	145	432	367
July	247	214	241	211	237	161	268	236	269	251	258	216	254	169	201	134	430	360
August	246	221	241	220	239	175	266	247	267	251	255	213	252	203	201	166	434	404
September	247	216	241	216	239	192	266	248	267	251	259	221	254	208	201	166	430	393
October	248	216	241	216	239	202	266	247	267	251	267	232	261	218	201	175	432	404
November	244	221	242	218	242	200	267	256	269	258	267	248	263	231	201	173	434	409
December	[1] –	–	242	220	242	205	267	259	268	262	267	241	265	230	201	171	434	414
Averages	247	221	242	219	239	190	267	244	268	257	263	233	260	215	201	167	433	401

[1] Gage station abandoned Nov. 13, 1926.

Appendix No. 4

Contracts made and pending during

Contracts relating to the

	1 Number of Contract	2 WORK	3 Number of Bids	Amount of Bid 4 Next to Lowest	Amount of Bid 5 Lowest	6 Contractor
1	19	Section 78, Mill Brook Valley Sewer, North Metropolitan System, in Medford and Arlington.	7	115,790 00	110,235 00[1]	Anthony Baruffaldi Co., Somerville.
2	21	Section 79, Mill Brook Valley Sewer, North Metropolitan System, in Arlington.	10	47,621 00	43,265 00[1]	Antony Cefalo, West Roxbury.
3	22	Removal of portion of existing wharf, dredging of basin, and construction of a new portion of wharf at Deer Island, Boston Harbor.	7	12,615 50	11,654 00[1]	Rendle Corporation, Chelsea.
4	23	Section 80, Mill Brook Valley Sewer, North Metropolitan System, in Arlington.	5	32,915 00	29,575 00[1]	Antony Cefalo, West Roxbury.
5	24	Section 81, Belmont Relief Sewer, North Metropolitan System, in Cambridge and Belmont.	11	63,537 00	63,491 50[1]	J. H. Ferguson Co., Providence, R. I.,

[1] Contract based upon this bid.

Appendix No. 4

THE YEAR 1926 — SEWERAGE DIVISION

North Metropolitan System

7 Date of Contract	8 Date of Completion of Work	9 Prices of Principal Items of Contracts made in 1926	10 Value of Work done Dec. 31, 1926	
April 16, 1925	April 30, 1926		$114,893 63	1
Dec. 3, 1925	Aug. 11, 1926		46,124 57	2
June 24, 1926	Nov. 1, 1926	For removing existing structure, pulling and cutting off pipes, dredging basin and removal of dredged material, $4,200 lump sum; for furnishing and driving oak piles, $0.75 per lin. ft.; for furnishing and placing Georgia pine caps, fir flooring, oak walings, etc., including material and labor for coating structure with wood preservative and making of connection between existing bridge and new wharf, $148 per M.A.B.M. in place.	10,993 87	3
Aug. 23, 1926	—	For earth excavation and refilling in trench and laying of pipe for 20-inch and 24-inch Akron pipe and 24-inch cast-iron pipe main sewer, $6.00 per lin. ft.; for earth excavation and refilling in trench and laying of pipe for 12-inch Akron pipe relief sewer, $2.00 per lin. ft.; for Portland cement brick masonry in manholes and special structures, $35.00 per cu. yd.; for Portland cement concrete masonry in trench and special structures, $10.00 per cu. yd.; for Portland cement boulder concrete masonry in trench, $1.00 per cu. yd.; for bank gravel refill around pipe in trench, $1.00 per cu. yd.; for rock excavation in trench, $6.00 per cu. yd.	22,693 00	4
Dec. 30, 1926	—	For earth excavation and refilling in trench and embankment for 30-inch concrete sewer and 16-inch and 30-inch cast-iron pipe sewer, $7.10 per lin. ft.; for Portland cement brick masonry in manholes and special structures, $34.70 per cu. yd.; for Portland cement concrete masonry in trench and special structures, $12.75 per cu. yd.; for Portland cement boulder concrete masonry in trench, $12.75 per cu. yd.; for spruce piles in trench in place, $0.65 per lin. ft.; for rock excavation in trench, $5.00 per cu. yd.	—	5

[2] Contract completed.

CONTRACTS MADE AND PENDING DURING THE YEAR 1926 — SEWERAGE DIVISION —*Concluded*

Summary of Contracts

	Value of Work done Dec. 31, 1926
North Metropolitan System, 5 Contracts.	$194,705.07

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